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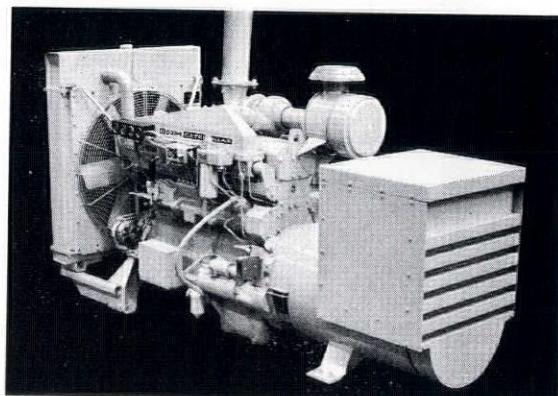
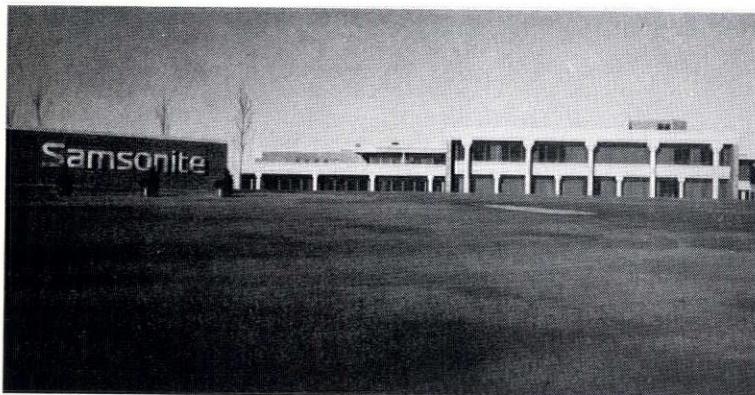
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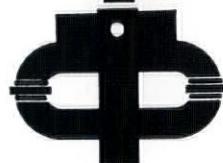
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VOLUME 7

NUMBER 10

MARCH, 1973

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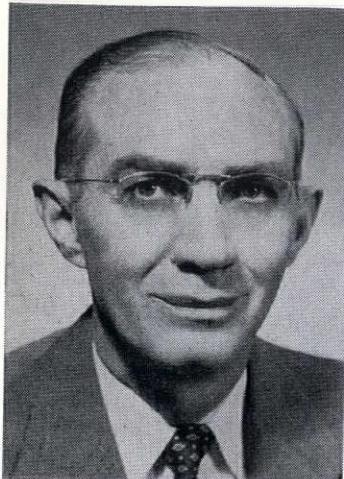
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Bradley P. Kidder, F.A.I.A.

July, 1901

January, 1973

There was an ineffable quality in this man which set him apart from his fellows. Indeed — his gifts as architect and man were many. He was quiet — yet purposeful; thoughtful yet expressive, and all of his associations with life were enhanced by his humor and humanity. We did not meet Brad personally more than a dozen or so times during the years he served on Symposia's Editorial Advisory Board but we felt privileged to be numbered among his friends. In his letters written month by month and year by year, we came to know him as the warm and wonderful person he was.

It is small wonder we anticipated finding a "letter from Brad" in our mailbox. These were sprinkled with cartoons and comments which were a delight—on May 1, he typed . . .

"It's May Day. It's Snow Day. It's no Day for a May Pole. But the Hippies still stream Barefoot Up and Down Canyon Road. How they stand it, we'll never know—even with sandals. And this Snow is a Cold Snow—mostly sleet and very Wet."



"I caught the Bug!"

"So did a lot of other people just as foolish. Why anyone would want to do such a stupid thing is—quite beyond comprehension—but a lot of us did it. Christmas Confusion—drawing deadlines, end of the year bills and accounting, good draftsmen leaving for greener fields and not so good draftsmen leaving by request, and everyone out sick for periods of 5 to 10 days. It certainly was a most Happy Holiday Season. However, the world seems to have gone on a-pace. Three youngish men of military persuasion gave up the Holidays to swing around the Moon, someone in Paris figured out how to make a square of a circle and all over the place, politicians are electing or selecting the men who'll run the country for the next couple of years."

In 1967, Brad and Harriet were in Europe where he delivered a paper on "The Causes and Effects of Moisture in Old Buildings in Desert Regions." The occasion was the International Council of Monuments and Sites Conference held in Rome—he wrote on his return: "After the twenty seven hour day occupied by the flight back to Santa Fe, let's say we were not in an exactly rested or exuberant condition—but we were so full of a Thousand and One sights, it will take some time to get them all sorted out. We once took a New Yorker and his wife through the mountains of Northern New Mexico and Southern Colorado, taking two days for the trip and anticipating an excursion to Estes and Trail Ridge following our stop in Denver. However, our guests upon arrival stated they were so saturated with Mountains and Marvelous Views, they had no wish to continue, but wanted to sort out and remember what they had seen to date. We have somewhat the same feeling about Italy."

The home Brad and Harriett built in Santa Fe—Territorial in concept—contains so much of the spirit of the people who have lived there so exuberantly for so many years. There is a particularly beautiful dining room cabinet with carved doors made by the owner, gracious wide window-sills, happy "sit down and relax" furniture and a garden just outside.

"In spite of snow and frost, our garden keeps blooming away. We've one long row of Red Emperor Tulips marching down the garden wall headed by a small group of martial brass in the form of yellow Jonquils—and behind march the Infantry in irregular array of purple Grape Hyacinths. Anyhow, it makes a very lovely sight, and I've just come in from watering the beds."

Brad's architectural legacy to our Western culture includes the sensitive restoration of a score or more of historic buildings—a multitude of residences, institutional and commercial structures and some lovely churches. But north of his beloved Santa Fe stands the Opera—an achievement to crown his working life as an architect . . . waking each summer to the ring of glorious music and the applause of thousands and thousands of clapping hands. His friend and partner, John W. McHugh, said it all . . . "He was an ARCHITECT!"

We have not enumerated here his tireless and devoted service to the American Institute of Architects—the years he spent as Chapter and Society president of New Mexico—as Western Mountain Regional Director—winner of the Edward C. Kemper Award—Fellowship in the Institute—President of the AIA Foundation.

To pay even a small measure of tribute to Brad Kidder . . . we could only hope to share with you some small glimpses of the man we knew—and cherished—during the past few years. His friendship, and that of his wife, Harriett, are very dear to us. It is a keen and personal loss—and we feel an overwhelming inadequacy. But, even Brad had a word for that when in 1967, he wrote . . .

"Maybe I'll do better next time—but like the Paint Salesman, I do not guarantee results unless the application is according to the specifications."

Brad Kidder's specifications are quite beyond our application.



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critique

(Since Symposia means an exchange of ideas—we provide this column for the bouquets and bulldozers—a chance to talk it over with your colleagues in the architecture/engineering/construction community. The welcome mat is out—address Symposia at 4070 Estes Street, Wheat Ridge, Colorado 80033)

This has to be almost the Kwickest Kritique on record . . .



Perhaps Chief Joseph was America's First Hippie Peacnik? Sorry 'bout that!

Allison

(This is, of course, Gordon Allison, FAIA, of Honolulu, Hawaii. A protagonist of "one picture is worth a thousand words." Thanks, Gordon. Due to "dat ole debbil" Deadline and the new arrangement in the Orient, we are all a little out-dated at this point. How about a little Thanks be to God on this one?)

Dear Betty and Fletcher:

It is with sincere regret that I inform you of the passing of Brad Kidder, FAIA, on January 27th. His funeral will be on January 30th in Santa Fe, and I expect to be one of the many architects in attendance.

To many of us in the profession, Brad was "Mr. A.I.A." He devoted a great deal of his life to the AIA, and to the profession of architecture. He was a former Regional Director of the WMR. I can recall many occasions when some of us as local AIA officers would call upon Brad for advice when a difficult problem came up. Everyone had a great deal of respect for his opinion, and we hesitated to make some decisions without getting his counsel.

We are going to miss Brad at National and Regional

meetings; we are going to miss his quiet and thoughtful counsel; we are going to miss him as a fine human being. I hope all of us will pause for a moment to recall what Brad Kidder has meant to each of us as individuals, and what he has meant to the profession of architecture.

Joe Boehning, Architect
Albuquerque, New Mexico

In lieu of the usual floral tributes etc. Harriett (Mrs. Brad) Kidder has asked his friends—a legion—to make contributions to a newly instituted Bradley P. Kidder Scholarship Fund at the University of New Mexico. Please address these contributions to Van Dorn Hooker (a former partner in the McHugh-Kidder firm) Office of the University Architect, University of New Mexico, University Station, Albuquerque, New Mexico—87106.

We urge your support of this Memorial—it is a fitting tribute to the man and the architect who contributed so faithfully and so well to the growth of his profession in the Western United States. It is but a small measure of our debt to him.

BOYD AUTHORS C. M. ARTICLE

Joseph A. Boyd is president of J. A. Boyd and Associates, construction and management consultants with offices in San Francisco and Phoenix, Arizona. A graduate of the University of Santa Clara and the University of California, he holds degrees in engineering and in business management and accounting.

Mr. Boyd established his own firm in 1963 combining the disciplines of computer technology and a staff of consultants with experience in architecture, construction and management. They provide a range of services which include estimating, scheduling, claim analysis, development of management systems and data processing.

Mr. Boyd was the principal speaker at the November 28th meeting of the Salt Lake City Chapter of the Construction Specifications Institute, and it is through our Board member, Mr. Elden Talbot, AIA/CSI that we are able to bring you his presentation including the excellent organizational charts. Our appreciation to Mr. Boyd and to Elden for making this article available to us and to Symposia's readers.

Public Affairs Conference/1973

Each year this Conference held in our Nation's Capitol gains in significance. Headquartered at the Mayflower Hotel — March 19-20, architects and engineers will be given the opportunity to learn and discuss the issues and meet their Senators and Congressmen. During the just-completed 92nd Congress an estimated 5000 bills were introduced all concerned with environment, housing, public works, codes, construction, labor relations, taxes, ecology, design, procurement and related subjects. The 93rd promises to be even more involved in issues pertinent to architect/engineer practice.

All members of A.I.A. and C.E.C. throughout the country have received the complete program and registration information. May we urge that a large number of Western A/E's attend this Conference. The Law you save may be your own!

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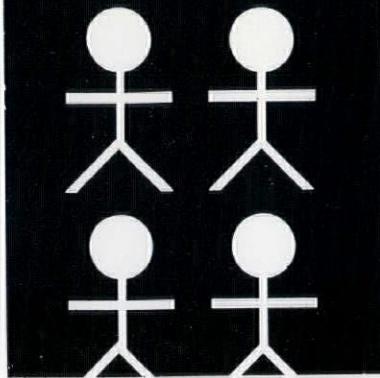
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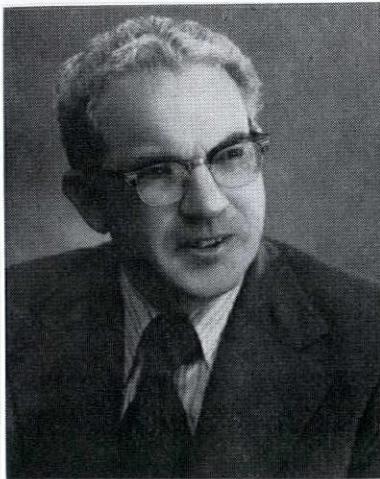


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UP UP With People!

(A brief report honoring Professional and Industry members in our Symposia Region who have achieved some of the "good things in life" in the past few weeks.)



UP With Huddleston!

Planning Consultant, Sam L. Huddleston of Denver has just been re-appointed by Governor John Love to a three year term on the Colorado State Board of Examiners of Landscape Architects. First named to the Board in 1970, this is Mr. Huddleston's second term to this body whose function is to license landscape architects in the state.

Nationally known as planner and landscape architect, Mr. Huddleston's firm has been commissioned for a wide range of projects from the 22,000 acre Franklin Mountains Wilderness Park for the city of El Paso, Texas to master land concept-planning for a college park campus for the University of Northern Colorado. He has received the National Merit Award from the American Society of Landscape Architects for Lake Pleasant Regional Park, Phoenix. This 10,000 acre park is water oriented with a marine stadium. Huddleston was also

the recipient of the ASLA National Design Award for the Valley Highway in Denver.

UP With Archuleta!

The Structural Engineers Association of Colorado has elected Salvador J. Archuleta as their 1973 "fearless leader." Mr. Archuleta is a partner in the firm of Johnson-Voiland-Archuleta and Associates of Boulder, Colorado. Other officers for the coming year are Charles Zecher, Vice President; Edward Bierbach, Secretary-Treasurer and Jerry Gray has been elected to the Board.

The S.E.A.C. is limited to registered Professional Engineers in Colorado who are principals in firms specifically engaged in providing structural engineering consulting services. They meet monthly at the Engineers Club in Denver where they enjoy outside speakers and an opportunity to exchange non-technical ideas and information beneficial to the practice of structural engineering.

SEAC has recently published a significant report on recommended snow loadings to be used as a "live load" in structural design throughout Colorado . . . a report which has received much favorable comment from State building officials, architects and engineers.

UP with Clough!

The New Mexico Building Branch of the Associated General Contractors has honored two Albuquerque gentlemen with the first S-I-R Awards to be presented by this group. The occasion was their Annual Banquet at the 25th Anniversary Convention held January 26th at the new Hilton Inn in Santa Fe.

Joe Martinez, the new Senior Vice President, made the first S-I-R Award to Dr. Richard H. Clough of the University of New Mexico . . . said Mr. Martinez, "In his many textbooks, including *Construction Contracting* which is used in colleges and universities throughout the country, Dr. Clough makes prominent mention of the AGC and its role as the spokesman for the General Contractor. He has been most instrumental in establishing the construction option in the Department of Civil Engineering at the University of New Mexico to help train young men and women in construction management-engineering."

UP with Long!

The second Award was made to Joseph D. Long, Jr., A.I.A./C.S.I. principal in the Albuquerque architectural firm of Long and Waters. He was honored for his efforts to help develop a dialogue among contractors, engineers, architects and owners on the subject of bidding procedures.

"Joe Long has opened the avenues of communication among several segments of this fragmented industry," Mr. Martinez said. "Through his interest and efforts in search toward better communication, contractors, architects, engineers, and owners are beginning to consult more frequently on matters of mutual concern in the construction industry."

Originator of the S-I-R Awards program is the Nevada Chapter of A.G.C. where awards have been made to those who have made an outstanding effort to better the construction industry for a number of years. The letters stand for "Skill, Integrity and Responsibility" — the cardinal A.G.C. principles. Recipients are presented with a handsome 14-inch statuette patterned after Norman Rockwell's painting, "The Spirit of Construction."

Congratulations to Dr. Clough and to Joe Long — first S-I-R Awards Winners in New Mexico!

UP With Hunter!



William Hunter, Sr., (Hapco, Inc.) of Phoenix was installed as "fearless leader" of the Air Conditioning Contractors of Arizona at a gala dinner dance held January 19th at the Moon Valley Country Club. Other A.C.C.A. officers for 1973 are J. N. McCray, Vice President; William Haggard Secretary/Treasurer and Board members—John Armer, Manuel Bowling, John Burnett, Howard Kraft and Roland Skinner

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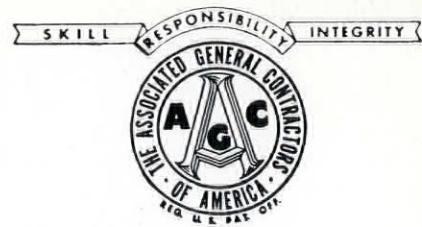
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Sincerely yours,

ELASTIZELL CORPORATION OF AMERICA

Leo A. Legatski
Leo A. Legatski, President



in convention assembled....

The New Mexico Building Branch Associated General Contractors

January 26, 1973

It was "Happy Birthday" time at the new Hilton Inn in Santa Fe as members of New Mexico's Building Branch assembled to light twenty five candles on the cake. Founded originally as the Associated Building Contractors of New Mexico — the Building Branch/AGC came into being in 1948 when the charter was presented to John L. Testman by Gayle Armstrong, then President of the New Mexico AGC Highway Chapter. There were twenty three members at that time and Alva J. Coats was the Chapter manager. Six of those original Charter members still are "among those present" a quarter century later . . . they are Lembke Construction; K. L. House Construction; Bradbury and Stamm Construction; Robert E. McKee Construction; George A. Rutherford, Inc., and the Testman Company.

The Convention in Santa Fe included all the "business as usual" with reports from President "Pete" Ford, from Chapter Manager, David McCoy and the several Committee Chairmen who discussed apprenticeship training, safety, public relations, labor relations, legislation and construction education. There were two major presentations—the first by New Mexico Representative George Gettinger (D.-Otro) and by Walter Kerr, a former Moscow correspondent for the New York Herald who now makes his home in Santa Fe. The AGC ladies toured the State Capitol where the legislature was in session.

At the annual banquet on January 26th over 250 members wives and guests were introduced to the newly elected officers. In addition to re-elected President M. B. "Pete" Ford they met Vice President (Senior) Joe R. Martinez; Vice President Vernon Jolly and Secretary/Treasurer Howard D. Williams.

It will be another active year for the New Mexico Building Branch, predicted President Ford, as he urged contractors to stand united at the bargaining table. There are 13 contracts to be negotiated in New Mexico during 1973.

Associated General Contractors Colorado, Building Chapter, Inc.

February 2-3, 1973

As initiated last year, some meetings of the Building Chapter were held in conjunction with the Colorado Contractors, the AGC Highway—Heavy, Engineering—Utility Chapter. In addition to these joint sessions, the Building Chapter enjoyed two interesting days of discussions devoted to business and information.

James M. Shaffer, Director of Colorado's Department of Labor, outlined the new proposed Colorado Occupational Safety and Health Act and how it would affect the general

contractor at the organization's Safety Breakfast. He also presented a number of safety awards to AGC/C members with outstanding safety records. The H. W. "Bill Houston Memorial Safety Award was presented to the R. W. Mier Construction Co. of Golden; the Jack R. Munroe Memorial Safety Award was won by Weatherseal Corp. of America. Gold, silver, and white hard hats were also awarded according to members with recognized safety status among members of the AGC, nationwide.

There was a particularly interesting report on Denver's "hometown" plan of affirmative action which featured June Wakeford, Regional Administrator of the Employment Standards Administration, U. S. Department of Labor and Bill Roberts who is Director of the Metro Denver Construction Plan.

Officers elected for 1973 include James S. Brown, President; Victor Y. Coulter, Vice President; Roland Fagre as Treasurer and Gilbert E. Johnson as Secretary. The Association's Board of Directors will be Robert E. Ammon, N. Kent Baker, Sidney Grazi, Harold G. Haddon, Bruce Hughes, Virginia Razee and Robert G. Tointon.

Colorado Contractors Association, Inc.

February 2-3, 1973

Convention activities of the highway—heavy engineering—utility contractor chapter of the AGC began with the safety awards breakfast, the 7 a.m. meeting February 2. William G. Lauer of Fort Collins presided at the meeting, and Becky King, Miss Denver 1972, presented awards for outstanding safety performance for the year. A lifesaving award was also presented to those who have saved a life or minimized injury on a construction project.

The education committee under the direction of Robert Lowdermilk of Englewood conducted the office managers' and superintendents' seminar. The seminar focused on public relations, safety, communications and labor agreements.

Associated General Contractors of America Tax Counsel Travis Brown, Friday morning, discussed company and individual tax matters, and Chas. E. Shumate, Executive Director of the Colorado Division of Highways, reviewed the current and future funding of the Colorado Highway Program Friday afternoon.

Colorado's Workmen's compensation laws and changes proposed by a national commission was outlined by James Shaffer, Executive Director of the Colorado Department of Labor and Employment. The Department's senior referee Ronald Jaynes joined Mr. Shaffer on the program.

A breakfast of the utility contractors under the direction of Bill Burks of Englewood began activities Saturday. The business session included a discussion of contractor markets by representatives of the federal, state and private

public works owners. The future construction market panel featured H. Fred Watts, Deputy Manager of Public Works, City and County of Denver; Col. Stuart Wood, Jr., Area Engineer, Corps of Engineers; Robert L. Clouthier, Colorado Commercial Supervisor — Forecast and Development, Mountain Bell; and William H. Hormberg, chief of The Municipal Waste Water Section.

The Joint-Membership meetings of the two AGC Organizations in Colorado were highlighted by two outstanding presentations. One was the address by Saul Horowitz, Jr., Senior Vice-President Elect of the Associated General Contractors of America. He spoke on current AGC Ac-

tivities . . . the status of today's General Contractor and his relative position in the scheme of things in the U.S.A. The Intra-Industry Luncheon meeting on February 2 featured Eliot Janeway, widely known economist, author and syndicated columnist.

Both groups concluded their annual conventions in the time-honored pleasant way. The CCA had their annual banquet on Saturday evening at the Hilton in the Grand Ballroom and the Building Branch, members, guests and wives (and a tremendous crowd, it was) enjoyed a fine dinner, excellent entertainment and dancing at the Regency.



The New Mexico Building Branch at the 25th Anniversary Party at the new Hilton Inn, Santa Fe. At right, Mrs. Ford cuts the cake as President "Pete" looks on. Dennis Robert, photographer.

CONSERVATION of ENERGY with PELLA CLAD and SLIM SHADES

OPERATING COSTS

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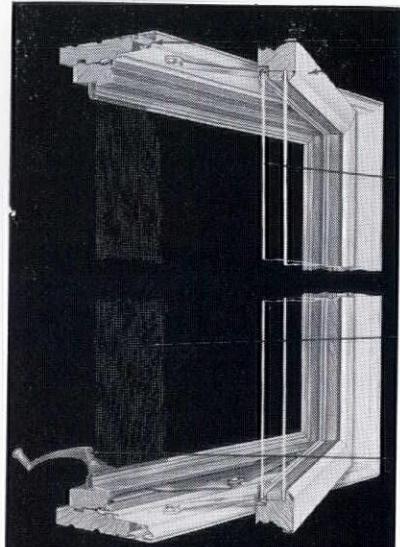
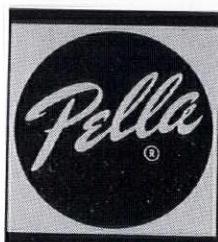
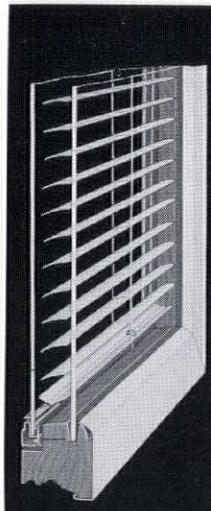
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WHAT OPTIONS DOES THE ARCHITECT/ENGINEER HAVE IN CONSTRUCTION MANAGEMENT?

A DISCUSSION by:
Joseph A. Boyd, President
J. A. Boyd and Associates
Construction Consultants

Fragmentation of ideas and resources is one of the most persistent, and costly problems for an owner in the development of a construction project.

This is due in part to the volatile processes involved; initial ideas are conceived; attempts are made to convey them to others; programs and schematic designs are evolved; during the continuing development of design, assessment of materials, methods and costs requires compromise; there is a continual flux of priorities, of schedules, of performance during both design and construction.

No small part of the fragmentation is due to the number of parties who contribute to the final project; and to their varying interpretations, motivations and levels of performance.

Faced with these potential variables, an owner wants assurance that there will be an active and continuing management effort to ensure that his goals are met when the project is finally realized.

'Active Continuity' is the term we've chosen to describe the idea that the best possible pieces are put together in the best possible arrangement for the life-cycle use planned by the owner.

One Answer — or several?

Our principal concern is to explore the most highly publicized response to this need: 'Construction Management'.

What is 'CM'? Is it, as is suggested, the best answer to the problem of costs and fragmentation? What alternatives are available, particularly to the owner and the A/E firm, either within the 'CM' concept, or in response to it?

The answers are different, depending upon the source. We'll paraphrase two opposite positions first; then we'll suggest several alternatives and some additional concepts that we believe may evolve from the growing demand by owners for positive and intensive project management.

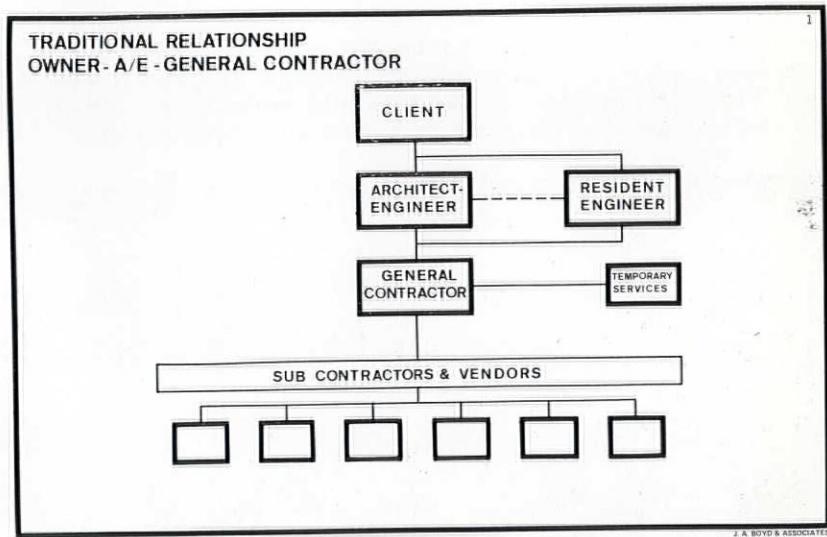


Chart No. 1 has been the basic A/E-client relationship for at least 700 years. Prior to that, the A/E and general contractor were effectively the same person — the mason — before he divided his activities between design and field work.

This chart should be compared to Chart No. 3 in relation to the capabilities suggested by the CCAIA's description of Comprehensive Architectural Services. Many A/E firms are moving aggressively in the direction of establishing separate firms, or associating with others, to provide both the Project Management expertise and the design services in Chart No. 3.

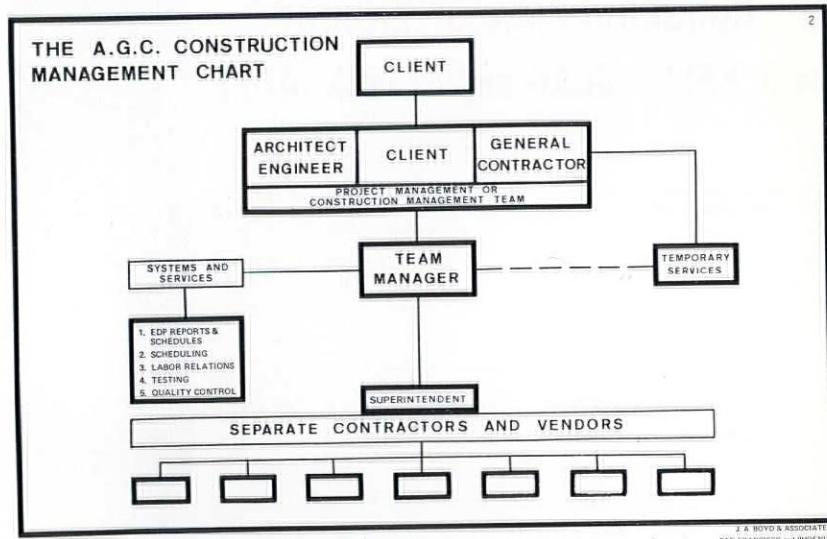
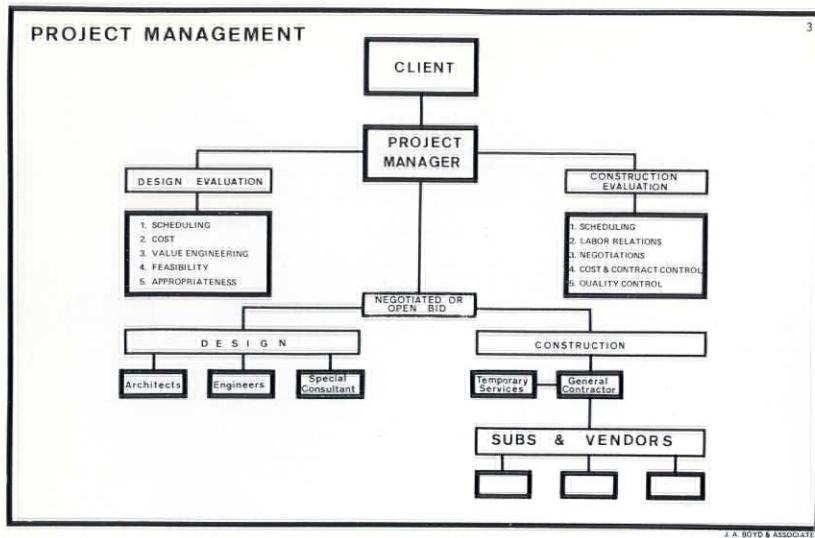


Chart No. 2 outlines the A.G.C. proposal. Note that, since most of the special services and systems, and the temporary construction services are provided by the G.C./CM, the individual who is the Team Manager is typically drawn from the general contractor's staff.

It is not a criticism, but only recognition of a basic fact that, because of the aggressive nature of the construction business, this individual is usually a dominant personality.

It is important, because of this, that his perspectives are aligned closely with those of the owner, if the 'active continuity' of the owner's goals is to be pursued vigorously.

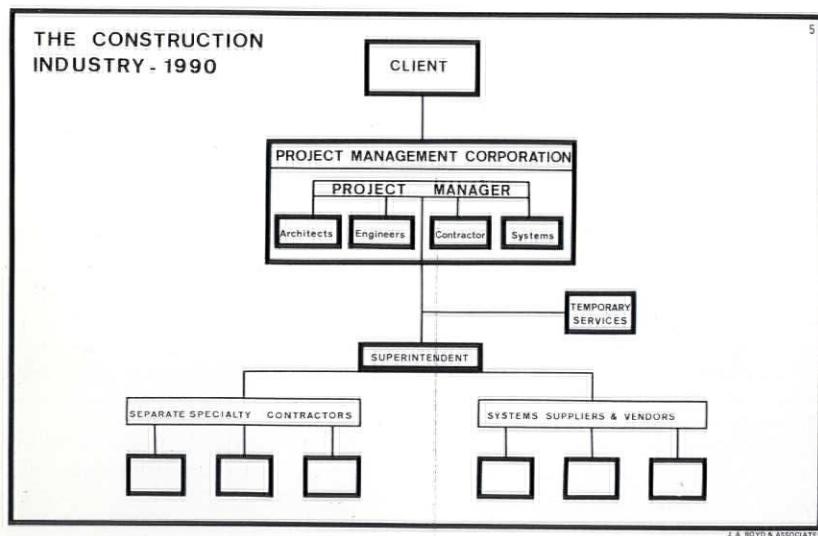


The relationships outlined in Chart No. 3 are closely indicative of the C.E.C. definition of the project team. Note that a single firm or individual directs all activity and negotiates and/or administers all contracts.

The Project Manager becomes effectively the owner's alter ego, within the limits of his authority.

His position, therefore, is very sensitive, and he must not only be highly qualified to interpret the owner's requirements and to evaluate the design and construction accordingly, but he must be without any motivation besides the owner's interests in administrating decisions and contracts.

As the chart suggests, the Project Manager must have access to all the people and systems necessary to provide intensive analysis of costs, construction methods, design evaluation, scheduling and contract negotiation.



20 years from now?

Chart 5 suggests what appears to be the ultimate direction of these experiments for at least major projects: firms which combine under one roof, the full capacity to study, design, negotiate and construct a project for a client.

The concept is already working successfully: The Austin Company, Bechtel, Turner, Tishman, are examples. It is interesting to note that most firms which have been successful in providing this total service have been essentially construction-based, with well established construction and financial records; and that they have specialized in selected areas of the construction industry.

Chart Number 4 on following page

The A.G.C.

The A.G.C. (Associated General Contractors of America) says, in effect: 'The general contractor is best qualified to lead a management team consisting of architect and owner; the general contractor in this relationship will be known as the Construction Manager; he will be the arbiter of construction methods, costs and budgetary appropriateness; he (the general contractor/CM) may, or may not, do construction work on his own account within this arrangement; he will direct all field work and will administer all construction funding; he will usually tender a guaranteed maximum price to the owner before the start of construction.'

The distinction usually claimed between this arrangement and that of a negotiated construction contract, is the fact that the Construction Manager is brought aboard at, or near, the inception of the project; and from that time takes the lead in scheduling, coordination and the general requirements for team management, contract negotiation with segregated subcontractors; and administration of all job costs and records.

It is claimed that this results in better practicability and costs before design concepts are absolutely frozen.

The C.E.C.

The C.E.C. (Consulting Engineers' Council) suggests² that there are three positions on the effective management team: the Design Manager, the Construction Manager and, over both of these, representing the owner, the Project Manager.

The Design Manager's duties are essentially those of the traditional A/E, for the first 4 phases of what are known as Comprehensive Architectural Services³.

The Construction Manager is responsible for direct construction costs evaluation and for onsite management of construction. He will provide temporary services on the job, and field administration, but will do no work with his own forces.

The Project Manager is responsible for representing the owner's goals, for overall project and budgetary appropriateness; and for control of all design decisions, contract negotiations and funds disbursement, on behalf of the owner.

Alternatives for the A/E

The Architect and the Engineer and

their respective organizations are, candidly, challenged as regards their traditional role as the owner's representative.

There is little doubt that the concerned owner, and particularly the government, is weighing, and experimenting with, the advantages of programs that provide more intensive analysis of costs, and at least purportedly, closer attention to the comprehensive life-cycle investment in their facilities.

The CCAIA (California Council, AIA)³ has responded by outlining a broad range of services, responsibilities and recommendations which the responsive A/E should be prepared to provide a client. Generally, these match the combined services of the Design Manager and Project Manager, as defined by the C.E.C.

Today's economics and de-facto competition make it impractical for any but the largest A/E firm to have in-house all the services and systems suggested by the 'CM', 'Project Management' or 'Comprehensive Services' concepts.

So, with a view toward assisting individual firms in evaluating and selecting which, of varying relationships to a client, is most viable, we'll describe several basic organizational programs.

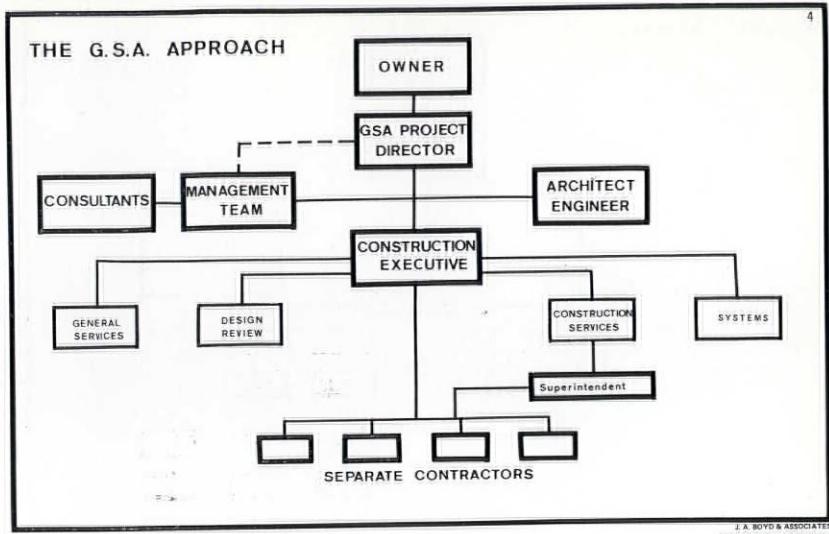
Do A/E's have a choice?

We believe there are two broad choices for the A/E: (1) Limit the size of the firm and scope of work to be undertaken; or (2) Associate, combine or merge with other firms, in relation to a selected direction and defined goals.

Some intensive soul-searching will be required for the A/E that has not yet moved in a positive direction. So, at the risk of being presumptive for those that have, we will suggest some considerations. These are not necessarily all-inclusive, but they are those we have found significant in working with various A/E firms as part of a Project Management Team.

1. Aggressiveness. The proposal of Project Management services to a client presupposes a certain level of aggressiveness, firmness and toughness. It's not a matter of interpreting ideas only, but practicality in dealing with people and with hard economic decisions that a client will be looking for.

He will want as his representative someone, or some firm, that he



The Public Building Services division of GSA has formalized the approach represented in Chart 4 and is currently appraising its benefits on several multi-million dollar projects.

The Project Director is on the owner's staff; the owner retains an A/E firm directly, to provide design services.

GSA then solicits un-priced proposals from 'Construction Management' teams which are prepared to provide all the services represented under the Project Manager in Chart 3. The criteria for the CM include both design and construction capability, but are heavily weighted in the direction of construction experience.

After elimination of all but a few proposals, GSA then requests priced proposals from the remaining teams, based usually on only a narrative description of the project. GSA has, with one or two exceptions, retained the team submitting the lowest of these priced proposals.

The Construction Executive can be drawn from any firm on the team. The same considerations regarding heavy construction responsibilities and liaison with the owner's goals are significant in his selection.

The Construction Manager will not perform any work with his own forces. All work is bid publicly to segregated contractors, each of whom performs his operation under the direction of the CM.

knows can deal in the marketplace for the best project for his needs.

2. Gravity. In a combination of bodies — as for instance, a merger — the heaviest weights tend to become dominant. If merger with other strong firms, particularly contractors, is in prospect, it will be well to consider the overall bargaining positions of all parties before proceeding.

3. The Costs of Comprehensiveness. It may be ideal to provide everything a client needs, out-of-house. But not all clients will want everything all the time. It's well to define those specifics which can be supported by the economics of income; and which can be supported, as well, by the realities of being really proficient in the particular service offered.

It will sometimes be more practical, and of better service to a

client, to have at a firm's behest, on his behalf, the services of a firm whose expertise and competitiveness in a certain specialty, assure both the A/E and the client that they're getting real experience in that area.

4. The 'team' is the keystone to 'active continuity'. A team isn't built on a single project, some government and private experiments to the contrary. The team, realistically constituted, is the evolution of continuing relationships.

The ideal, as in a marriage or partnership, is a relationship within which each member can anticipate the performance and requirements of the other members; and from which a client can, from even the atmosphere generated by this teamwork, receive the assurance of positive, active and concerned continuity of attention to his project goals.



1973 Exhibition of School Architecture

at the Annual Conventions

American Association of School Administrators

Portfolio II

Like our friends and neighbors of the A.A.S.A., we have expanded our coverage of the 1973 Exhibition of School Architecture. Their first convention and Exhibition took place February 24-28 in their familiar stomping grounds—Atlantic City. Now, it's "Go West" time with a second convention and the complete Exhibition on March 17-21 in San Francisco. In our February issue, we presented seven of the facilities located in Symposia's region (Portfolio I) and this month we are back with more in Portfolio II. As we said in February, and we will say again—our sincerest appreciation to A.A.S.A.'s Director of the Architectural Exhibi-

tion, Beatrix Sebastian, Hon. AIA, for her wonderful cooperation and to the many architectural firms who so generously supply us with information and graphics.

Two Special Awards were given this year—selected from the 220 educational facilities in the Exhibition. The Walter Taylor Award for excellence in educational environment was presented in Atlantic City to Louis Saur, AIA, of Hoffmann-Saur Architects, St. Louis and Wayne W. Fick, superintendent, Parkway School District, Chesterfield, Missouri. The Shirley Cooper Award for architectural design will be presented to Alexander G. Tarics, president, Reed and Tarics,

Architects and Harold T. Santee, superintendent of schools, Palo Alto. This award will be made in San Francisco.

The Awards Jury which included, from our area, Harry W. Berry, AIA, of Seifert, Forbes and Berry, Tacoma, Washington, selected several new schools for special citations including (from Symposia-land) the DeVry Institute of Technology in Phoenix (Caudill Rowlett Scott, New York) in our February issue and Illahee Junior High School, Federal Way, Washington from the office of Robert Billsbrough Price, FAIA, and Associates in Tacoma. (Shown below)

ILLAHEE JUNIOR HIGH SCHOOL * FEDERAL WAY, WASHINGTON

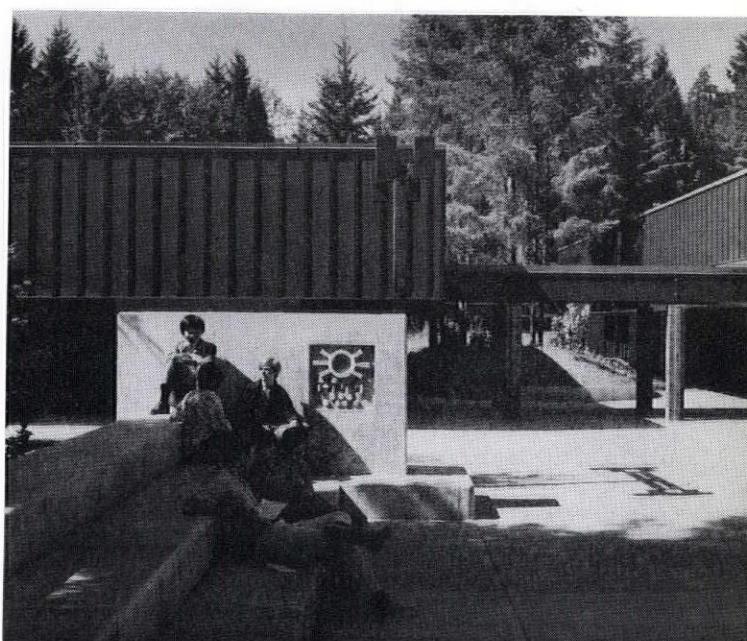
GEORGE C. COCHRAN, SUPERINTENDENT

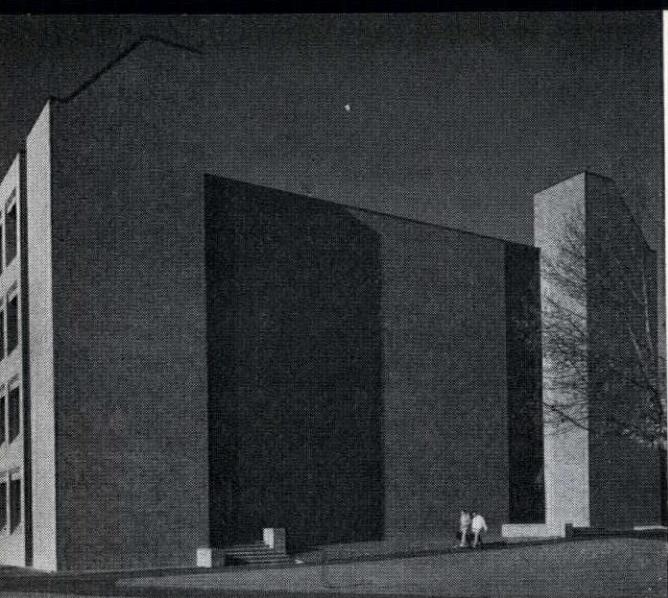
ROBERT BILLSBROUGH PRICE, F.A.I.A. AND ASSOCIATES, TACOMA

Photography: Morley Baer

A beautiful wooded twenty acre sloping site enhances this group of nine buildings tightly clustered around a Student Commons. It was the desire of both District and Architect to provide completely flexible spaces adaptable to changing teaching techniques for 1000 regular students and 48 handicapped students—grades 7-8. The absence of interior bearing walls and columns allows this flexibility with a minimum of interior circulation. Access to teaching areas is by exterior, channel-like covered walks giving fine weather protection. Exterior finishes are red brick to door head height on low buildings, to the roof on the higher structures. Bronze anodized aluminum material forms the deep fascia of the covered walks.

Of particular interest are the brick carvings designed by the architects' collaborating artist which depict the Indian gods of the Illahee tribe expanded to include gods of football, baseball and track. In the Student Commons is a contemporary version of an Illahee totem pole in carved brick. A fun school!





AEROSPACE RESEARCH LABORATORY

UNIVERSITY OF WASHINGTON

CHARLES E. ODEGAARD, PRESIDENT

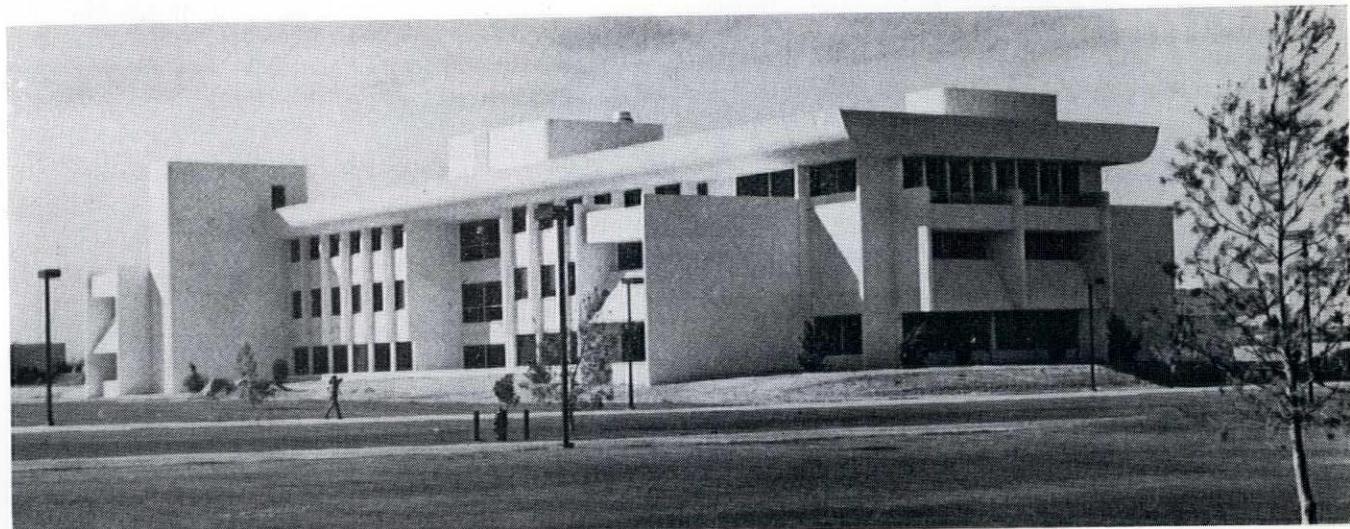
THE RICHARDSON ASSOCIATES, ARCHITECTS

Photographer: Hugh Stratford

The challenging nature of interdisciplinary aerospace oriented investigations and the potential for expansion governed the site selection and specialized facilities. With the central role played by the research program in the College of Engineering program, the building is symbolically located in a key site, centrally located in the engineering sector of the campus. The five story 110,000 square foot building was placed to allow growth horizontally and to consider eventual covered links to adjacent buildings for movement of equipment and personnel.

Office space has been designed to accommodate shifting research personnel and student requirements and all are keyed to an attitude of expansion and internal flexibility. Equipment and mechanical spaces are all located adjacent to but separate from laboratory spaces to facilitate access but to preclude fixed elements from impeding on the equally flexible laboratory areas. Daylight as a variable in experimentation, wide door openings and ample corridor and elevator space were provided to enable movement of large equipment. This design concern for flexible laboratory facilities has the capability of housing a wide range of equipment which might be required for future use.

The building itself, although strong in visual character relates to its neighbors in terms of material, color, texture scale and form.



COLLEGE OF EDUCATION * UNIVERSITY OF NEVADA, LAS VEGAS

DR. ROMAN J. ZORN, PRESIDENT

DR. ANTHONY SAVILLE, DEAN, COLLEGE OF EDUCATION

PRINCIPAL IN CHARGE: ROBERT A. FIELDEN, AIA

JACK MILLER AND ASSOCIATES/ARCHITECTS & ENGINEERS, INC.

Engineers: Mechanical and Electrical—Johnson, Joeckel, Bartley & Associates

General Contractor: J. A. Tiberti Construction, Inc.

Photography: Robert Fielden and Terry Todd

It is always a pleasure to have a project play a return engagement — in the case of the College of Education, University of Nevada, in Las Vegas, this is a second time around. A concept design study appeared in October, 1970. Although teaching is the primary function of the structure, the teaching spaces include a variety of areas—for instance, laboratory classrooms for methods instruction for early childhood and elementary education, a science methods laboratory, special education programs with two-way mirror observation rooms, special hardware etc. and special methods classrooms for secondary and

elementary teachers. The College further includes conference and seminar rooms to meet needs of the large graduate program, to support faculty research and as a center for community services.

The 93,474 square foot complex is a combination of as-cast and pre-cast reinforced concrete, heavily sandblasted and sealed with a semi-transparent waterproof stain. The interior stained concrete finish is supplemented with twenty-one independent color schemes coordinated to all furnishings and equipment and except for corridors and stairwells, the buildings are entirely carpeted. There are a series of exterior environmental areas and interior open air courtyards and patios designed to serve both the academic and leisure periods for faculty and students.

Attractive, and functional the Highland ERAC concentrates all the resources, human and material, needed to support the instructional processes of the district. As such it promotes the best return from instructional, business, personnel and administrative specialists to improve teaching techniques and curriculum. Flexibility was a keynote with areas designed to be expandable, adaptable and very accessible. A logical arrangement and central location provides maximum centralization and a "one-stop" teacher shopping center for instructional materials, advice, personnel matters, meetings, business affairs and administrative assistance.

Built under the "Keep Washington Green" program, many of the existing trees were preserved and a most attractive and stimulating environment was created not only for teachers and students but for community use. Dr. John Fotheringham, Assistant Superintendent has concluded — "The ERAC is not an ordinary office building. It was planned and designed to serve the unique needs of the Highline School District and has served that purpose well."



EDUCATIONAL RESOURCE AND ADMINISTRATION CENTER * SEATTLE, WASHINGTON

HIGHLINE PUBLIC SCHOOLS, DISTRICT 401

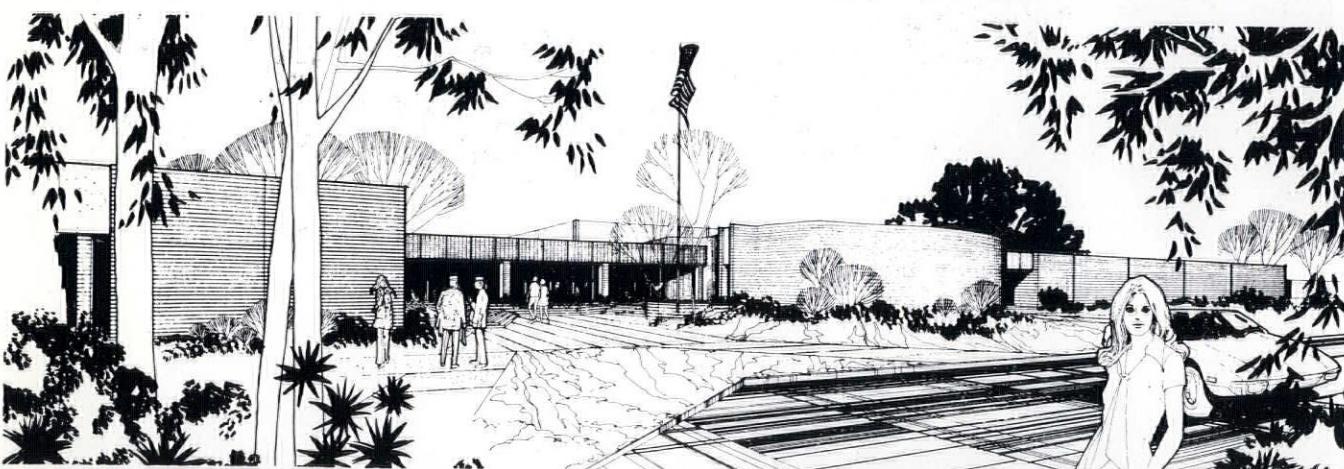
SUPERINTENDENT: DR. ROBERT D. SEALEY

RALPH H. BURKHARD, ARCHITECT, A.I.A., SEATTLE

General Contractor: Western States Construction Company, Bellevue

Photography: Don Cook, Tom Cameron, Gale Anderson and

Mike Morganthaler—photographic students at the Occupational Skills Center, Highland Public Schools



COLUMBINE/GREEN MOUNTAIN/POMONA SENIOR HIGH SCHOOLS

JEFFERSON COUNTY, COLORADO

ALTON W. COWAN, SUPERINTENDENT

Construction Management: Mead and Mount, Denver

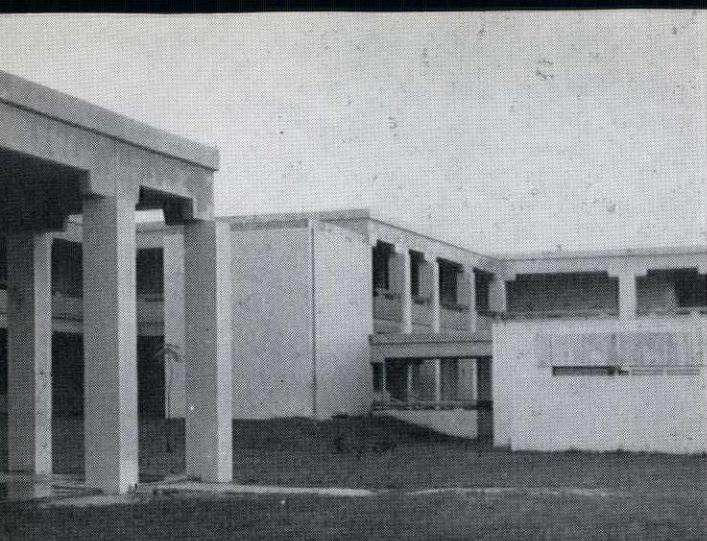
WILLIAM BLUROCK AND PARTNERS-CORONA DEL MAR, CALIFORNIA

The Blurock firm was commissioned by the District to design and build three 1,500-student High Schools (9-12) in fifteen months. The design criteria is much the same followed by this school system for some years providing flexible interior spaces to enable instructional staff and community to make decisions related to the kinds of space required by a variety of educational programs. Further this flexibility should encompass the use of electronic, electrical, audio and utility systems as well as providing for further expansion.

Utilizing these policies and other established criteria, the design developed into a compact plan which features the academic departmental areas tightly clustered around a sunken media center, and the physical education and crea-

tive arts center clustered around an enclosed Student Commons. This Commons serves as the major circulation and student activity area and also houses a 300-seat auditorium. This facility is designed to expand in audience capacity by opening large doors between commons and auditorium and relocating portable bleachers from the gym.

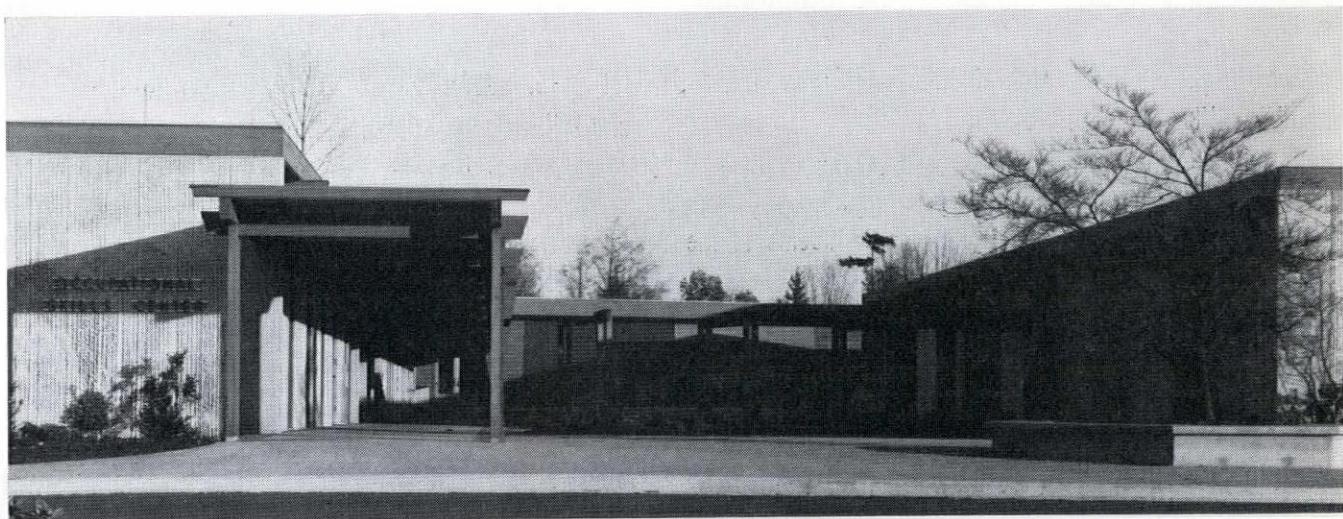
The structural system is steel framed 30-and 50-foot bays, and the exterior sheathed in masonry veneer. Interior walls in the academic areas are for the most part demountable and ceilings are of the suspended acoustic type designed on a modular system. The projects are scheduled for completion in September, 1973 at a square foot cost of \$20.00.



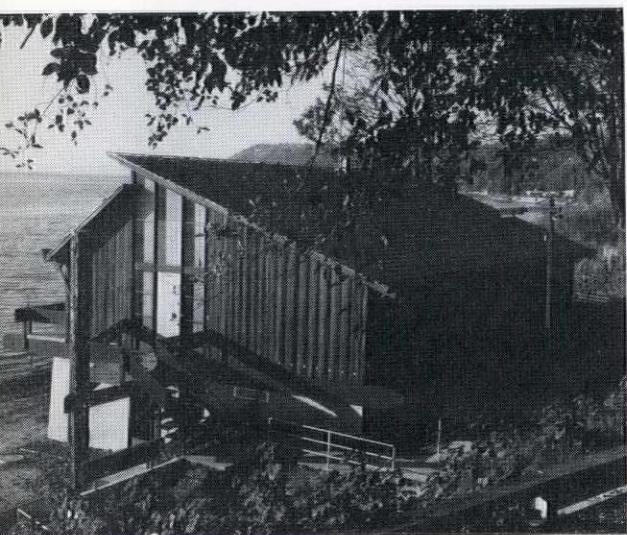
HARMON LOOP ELEMENTARY SCHOOL * DEDEDO GUAM, M. I.
HAVER, NUNN AND NELSON, ARCHITECTS
AGANA, GUAM, M. I.

Designed to accommodate 900 students (K-4), Harmon Loop is a free-flowing, yet compact, facility which also serves as a community center for the adjacent residential area. Weather conditions are, in a word, severe. On the "Typhoon Track," winds can range upwards to 200 knots per hour, temperatures range from 85-90 degrees and humidity between 90-100%. The design solution called for a compact facility utilizing the prevailing trade winds in non-air conditioned spaces with maximum protection from the "horizontal" rains which often accompany these breezes.

The library-learning center and administration facilities are air-conditioned but situated so as not to impede air flow through non air-conditioned areas. The cafeteria/community center spaces accommodate larger groups for both learning and civic activities and the complete kitchen has storage and supply back-up for emergency typhoon situations. The architecture reflects the local indigenous character . . . influenced by Colonial Spanish, Filipino and Early American, yet using the structural techniques which afford a typhoon shelter to the adjacent residential community. Cost of the facility — \$16.00 per square foot.



OCCUPATIONAL SKILLS CENTER * SEATTLE, WASHINGTON
A TRI-DISTRICT PROJECT —
HIGHLINE SCHOOL DISTRICT—ROBERT D. SEALEY, SUPERINTENDENT
FEDERAL WAY SCHOOL DISTRICT—GEORGE COCHRAN, SUPERINTENDENT
SOUTH CENTRAL SCHOOL DISTRICT—MYRON COLBURN, SUPERINTENDENT
RALPH H. BURKHARD, ARCHITECT, A.I.A., SEATTLE
General Contractor: Robert E. Bayley Construction Co. Inc., Seattle



Pooling funds from three districts on a pro-rated basis enables the eleven high schools in suburban areas south of Seattle to provide a broader program in vocational education. The Skills Center located approximately in the center of the districts . . . 25 miles long and 8 miles wide . . . is operated by the Highline School District and emphasizes the importance and dignity of all forms of

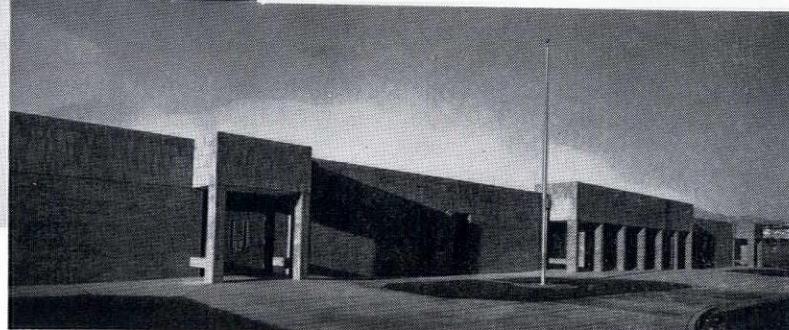
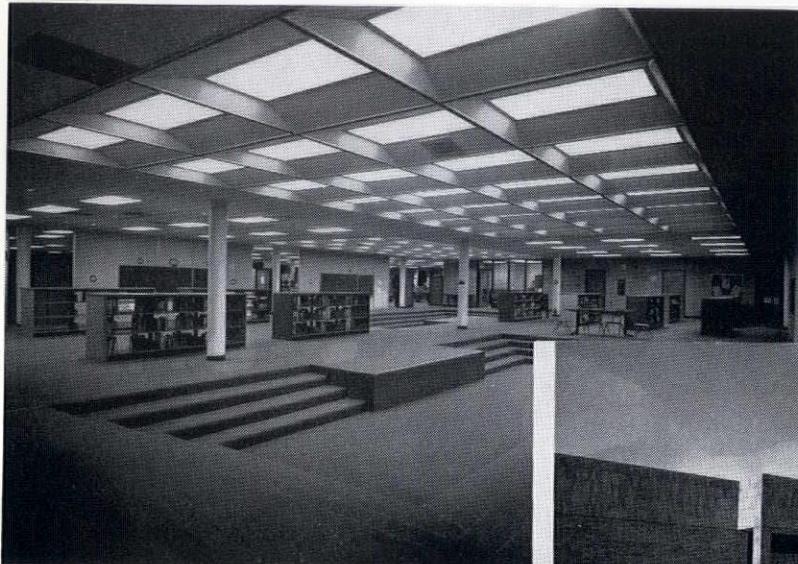
employment. Actually two buildings and two sites were involved.

The Skills Center at Burien presented two major site problems. Considerable subterranean water was eliminated by a deep interception ditch and the use of off-site, pit-run sand and gravel for access and fill under the floor slabs. Located at the southwest corner of the Seattle-Tacoma Airport, airplane noise was handled in several ways. Exterior tilt-up concrete walls were used and 4" laminated roof decking was rigidly insulated. All roof penetrations including air-supply and exhausts were sound trapped.

Wall openings were sealed with sound resistant glass. In the interior court surfaces were formed to chowder the noise . . . the under side of covered walk ways employing beveled siding to prevent reverberation.

The Marine Technology Facility located at Seahurst Park

not far from the parent Skills Center deals with all problems of seamen . . . above, on and beneath the surface of salt water. Total capacity of the facilities is 550 students (11-12 with some grade 10) and contains 41,000 square feet at a square foot cost of \$22.06.



Centennial Elementary School (K-6) is located on a ten acre site which is adjacent to a city park. Although the optimum occupancy is 780 students, the present enrollment is 925 — a not unusual state of affairs in rapidly expanding areas in our Western part of the country. The stepped down carpeted area in the media center which is

skylighted above is not unlike similar facilities developed by this architectural firm. A simple, no-nonsense architectural statement, the Centennial facility was built at \$16.61 per square foot and was completed in approximately nine months from contract to occupancy.

Symposia Welcomes . . .



BOYD A. BLACKNER, AIA

We are in the "hail and farewell" department as we welcome Boyd to our Symposia family . . . since he has valiantly picked up our Utah torch from Nancy and Ashley Carpenter. Certainly Boyd is well known throughout the Western Mountain Region since he is almost always "among those present" at Regional Conferences and frequently goes home with a Design Award in his pocket.

He is, of course, a corporate member of the Utah Chapter/AIA, former editor of Utah Architect and served on the Board of Directors, 1968-'72.

Boyd is a Utah native, received his Fine Arts and Architectural degrees from the University of Utah where he was awarded the Alpha Rho Chi medal and began his architectural career with the Utah firm of Cannon, Smith and Gustavson. He also worked for Georgius Y. Cannon, FAIA and for Snedaker, Budd and Monroe before he took a turn around the country. His other experience includes Job Captain jobs with Hellmuth, Obata and Kassabaum in St. Louis, with CRS in Houston and with Victor A. Lundy of New York City and Sarasota, Florida. He now has his own practice—Boyd A. Blackner and Associates in Salt Lake City.

Although his firm practices all kinds of architecture—from residences, churches and schools to commercial work and whole communities, Boyd is something of a fountain expert. He has designed several and two of them—the University of Utah's Library Plaza Waterfall Fountain and the Westminster College Fountain and Plaza have been winners in the WMR Award Program.

Boyd's lovely wife, Ann, is a Phi Beta Kappa graduate of the University of Utah and shares with Boyd the great fun of raising four children . . . Catherine, David, Elizabeth and Gennevieve. We are certainly pleased to have Boyd and Ann as a part of our Symposia family.

Wrapping It Up!

The Region 10 Conference
Construction Specifications Institute
February 8-10
Albuquerque, New Mexico

If you are looking for a new way to spell HOSPITALITY — may we suggest A-L-B-U-Q-U-E-R-Q-U-E! This was really the theme of the Region 10 Conference held at the Four Seasons Motel in February. Visitors were met at the Sun Port with hearty handshakes, transportation and V.I.P. treatment. Those of us returning to the Four Seasons (site of the Western Mountain Region/AIA Conference last October) were greeted at the Reception Desk like old friends. In no time at all, you were catching up on the latest with old buddies and meeting some great new ones. It became immediately obvious that the Region 10 Group was following Director R. (that's Rocky, you know) James Noone's excellent advice in his Symposia message. It was "enjoy! enjoy!" from here on out.

The Patio area surrounding the indoor swimming pool provided a beautiful backdrop for the initial Event—an "attitude adjustment" period on Thursday evening. A number of attractive display tables showcasing building products were set up for the edification of those present, and at the conclusion of the "adjustment" . . . Albuquerque Hosts and their ladies escorted visitors to different restaurants chosen for their particular cuisine. (We opted for South-of-the-Border food in Old Town where we noted that Tony Murray really enjoyed the

cold sherbet following a marinated steak. Toasty tongue, eh, Tony?)

On Friday morning, Symposia's Editorial Advisory Board met for breakfast and were pleased to welcome to our table Institute Vice President, Herman Hoyer FCSI of San Francisco, Robert Petterson, FCSI, Production Systems for Architects and Engineers, Washington, D. C. and Executive Director/CSI, Joe Gascoigne. Also on hand for scrambled eggs were Albuquerque President, Gordon Bosl; Conference Chairman George Chant; Terry Strong, our VPCI man from Colorado Springs and the sweetheart of C.S.I., Atha Lavelett . . . also from the Pikes Peak Chapter.

The first session of the Conference opened with Welcomes . . . Welcomes from George Chant, from Gerry Gasparchik, from County Commissioner, Corky Morris and from Bob Schmidt. Bob even went so far as to suggest that the less than ideal weather conditions prevailing in Albuquerque had actually been provided to make the folks from Colorado, Utah, Washington, D. C. et al feel completely at home. This idea Jim Noone felt was a little like sharing an epidemic of leprosy . . . a thoughtful gesture, but unnecessary.

Chapter Presidents then reported on activities and programs past, present and future. Albuquerque President **Gordon Bosl** reported increased mem-

CONSTRUCTION MANAGEMENT
CONSTRUCTION
SPECIFICATIONS
INSTITUTE 8TH
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10 CONFERENCE
FEBRUARY 8-10, 1973

bership, a treasury in the black and the joint meetings with AIA, AGC and CEC on Bidding Procedures. The Albuquerque Chapter meets the first Tuesday of each month at the Sun-downer . . . that's a new location. **Jack Kruse**, President of the Denver Chapter, reported that they now have 170 members and reviewed all programs presented since the Joint Region 10-11 Conference in Phoenix. The Denver budget is balanced. **Bob Fishkin** of the El Paso Chapter cried a lot about a non-existent rate of growth and general disinterest. Help was promised. **Scott Campbell**, President of the Phoenix Chapter, said they now number 104, presented a rosy financial statement, and said this year's Products Fair which for the first time was a joint effort with Producers' Council was more successful than ever. Their programs are projected on a long term basis, this year's theme has been "The Construction Team." President **John TenEyck** summarized the programs of general interest in the Pikes Peak Chapter mentioning in particular the upcoming April meeting on "The Punch List." He noted that when Director Noone and Section Director Keeton attended — they were a program in itself. Noone said that although some resemblance to the "Bobbsey Twins" had been mentioned, they were really on hand only as observers. No song and dance routine is presently planned. The Salt Lake City Chapter was represented by Vice President, **Keith Richardson**. Keith reported their effort to stimulate meeting attendance has resulted in a number of luncheon meetings during the year which have been very popular. Their meetings are planned well in advance and of real interest to the membership. CSI Manuals have been presented to the University of Utah and to the Utah Chapter/AIA. **Bill Ross** from Tucson ruefully admitted it hadn't been such a happy year . . . however by the dint of 3 mailings and 3 phone calls





they had 45 out for the January meeting (Membership is 49). Lack of interest in the documents program, Bill feels, is due to the six years it took the Tucson Chapter to produce the technical study on Adobe. Much of this time was devoted to answering objections made by the Washington, D.C. Chapter, and after all what in hell do those birds know about adobe. (Right on Ross!)

Following a Continental Breakfast served in the meeting room, conferees then heard from the "higher echelons" of the Institute. **Regional Director Noone** in his brief (and witty) report to the Conference asked that information gained at this meeting be passed along to the Chapters and urged a concentration on programming and membership. He also underlined the importance of a new Institute By-Laws revision which will make it possible for names to be placed in nomination for Institute offices from sources other than the Nominating Committee. He announced that the national Publications Committee will become defunct as of July, 1973 and activity will continue only on the Chapter and Regional Level, and that instead of one Vice President being responsible for Liaison, it will become a function of the entire Executive Committee. He also urged Chapters to discuss in depth the Referendum which will (if passed) make it possible for Industry members to serve as Chapter Presidents . . . he underlined that this is to be at the **option of the Chapter**.

The Report from **Southwestern Section Director, Tom Keeton** was particularly directed to Industry members and their active participation in CSI affairs. As of January 1, Tom said membership in Region 10 was 493—and national Institute membership was 9,444. These figures do not, of course, reflect the substantial increases made during the current membership campaign. He mentioned

briefly the new Group Insurance Program being offered, and the fact that Phoenix has been selected as the Host Chapter for the 1983 National C.S.I. Convention. (Now . . . that really IS looking ahead!) Tom also announced that his successor as Southwest Section Director will be Robert Ashbrook of Santa Fe Springs, California

Institute Vice President Herman Hoyer, FCSI, brought greetings to Region 10 from the Executive Committee. Herman expressed his appreciation for the privilege of working with the talented and dedicated people at the Institute, and urged those present to make a very real effort to attend the National Convention in Washington, D. C. to meet their national officers and Institute staff. He stated it was very important for good ideas generated at the Chapter level reach the National Board . . . and explained that a simple outline format given to either the Regional or Section Director would be given earnest consideration at the National Board meetings.

Joe Gascoigne, Executive Director of the Institute, was the last speaker on the affairs of the Institute at National, Section and Region levels. He directed attention not only to the Silver Anniversary Convention in Washington, D. C. but to the special Founder's Issue of the Specifier in June. He further reported that Specifier is now second only to Engineering News Record in advertising in a construction publication. He outlined the Educational program which presently includes formal courses at the University level and Educational outlines. Future programs will increase the sophistication of the presentations with slides and finally with video tape, an excellent media since most University departments have the soft wear already available. He spoke highly of the in-house COMSPEC terminal at Institute Headquarters

and of the surprisingly low cost of this automation.

Following the reports on Institute Affairs — conferees were privileged to hear a scholarly presentation by Dr. Richard Clough of the University of New Mexico. A spruce, gray haired gentleman, Dr. Clough provided everyone with a great deal of food for thought in his presentation on . . .

METRICATION — AND THE CONSTRUCTION INDUSTRY

I'm pleased to share some of my thoughts with your influential group about a matter of first-rate importance; that of approaching metrification in this country and its implications for the construction industry. The conversion of length and force to metric units is only a part of what probably will be the adoption of a much more comprehensive set of world-wide standard units. These units were adopted by the International Organization of Weights and Measures in 1960 and are referred to collectively as the "Système International d'Unités," (International System of Units) now commonly referred to simply as SI.

The SI system is founded on six base units:

meter — for length
kilogram — for mass
second — for time
ampere — for electric current
kelvin — for temperature
candela — for light intensity

From these are derived literally hundreds of additional units such as square meters for area, newtons per square millimeter for stress, cubic meters for volume, meters per second squared for acceleration, and on and on. This morning, I will refer to the SI set of standard units merely as the metric system and to the conversion to this new system as metrification.

The matter of metrification has been debated in the United States for almost 200 years and the changeover to the metric system has been seriously considered several times. Starting early as 1896, bills have been introduced in Congress recommending adoption of the metric system but despite such well-intentioned and forward-looking efforts this country has never seen fit to make the conversion and continues to use the traditional English foot-pound system.

However, recent developments strongly suggest that adoption of the metric system by the United States may be reasonably close at hand. In August, 1968, Congress directed the Department of Commerce to conduct a survey of how the increasing world-wide usage of the metric system is affecting the United States. After study by a blue-ribbon group of experts representing a broad cross-section of industry, science, engineering, and labor, a report was issued in July 1971; the basic recommendation of which was:

"On the basis of the evidence marshalled in the U. S. Metric Study, this report recommends that the United States change to the International Metric System through a coordinated national program over a period of ten years, at the end of which time the nation will be predominantly metric."

Subsequently, the United States Senate passed the Metric Conversion Act of 1972 on August 18 of last year. This act would establish policy on substitution of metric measurement units for customary units and on the development of revised national engineering standards based on metric measurements. The House of Representatives has not yet taken final action on this matter although a similar bill is now before the House Science and Astronautics Committee. The final action to be taken by Congress in this regard is, of course, unknown but official adoption of the metric system appears to be inevitable.

Major impetus stems from the fact that America is now the *only* major nation in the world still committed to the foot-pound system. At the present moment, only Burma, four small African nations, four Caribbean island nations, a few Arabian desert territories, and the United States have not made a commitment to go metric. Canada recently announced officially its intention to convert, Australia is now starting its conversion, and

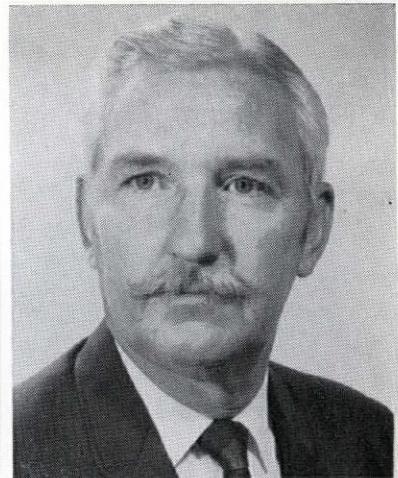
Great Britain is in the second half of a 10-year changeover period. The United States, in clinging to its cumbersome and outdated system of weights and measures, sometimes seems to be in the ludicrous position of saying "Stop the world, I want to get off."

In actual fact, there has been creeping metrification in this country for many years, a gradual acceptance of metric units caused by the undeniable advantage of the metric system as well as the inexorable pressures of international relations and trade. The scientific community has long recognized the metric system as essentially simple, easy to teach, easy to learn, easy to use, economical of time, and much less prone to error.

The U. S. Bureau of Standards adopted the SI system of units in 1964 and NASA has since followed suit. Army ordnance is now largely metric, and you buy camera film and skis in terms of millimeters and centimeters. Many of America's latest swimming, track, and other athletic facilities have been constructed to metric measurements, reflecting international sport standards.

The fact that practically all of the rest of the world is now metric is increasingly acting as a trade barrier for American industry. Goods and equipment manufactured using foot-pound units are generally not entirely compatible with trade practices in metric countries. To overcome this drawback, many American manufacturers are now having to produce two versions of the same product, one for home consumption and the other for world markets. Overseas subsidiaries of U. S. companies are having to develop and use production standards that are different from and independent of those of the U. S. based parent company. This is an expensive and unnecessary duplication of design and production effort.

Although a gradual drift toward metrification is undeniably taking place, gradual metrification is *not* the optimum way to effectuate a changeover. It took Japan 40 years to convert, a process that proved expensive, and grossly inefficient. Great Britain, on the other hand, has shown that where the transition is done with planning and dispatch, the process is much less painful and vastly more economical. In addition, there are pressing reasons why the changeover should take place in this country at the earliest possible moment. Surely,



Dr. Richard Clough

one of the most important of these considerations is America's worsening trade isolation from the rest of the world.

At this point, it must be noted that the problem of world trade is deeper than just the differences between the foot-pound and the meter-kilogram system of units. Product compatibility does *not* depend upon measurement units alone. Commercial and industrial standards, commonly called engineering standards, must also be the same to achieve product compatibility. Homogeneity of both units and engineering standards is required for complete product compatibility. There are now two international bodies working to enhance world trade and commerce through the development and promulgation of world-wide engineering standards. The International Electrotechnical Commission (IEC) concerns itself with electrical standards. The International Organization for Standardization (IOS) is involved with standardization in all other industrial fields. The system of units used by these two organizations is rapidly becoming exclusively metric.

These two groups are making substantial progress on the establishment of international industrial standards. Because these standards are almost entirely metric based, the United States is increasingly finding its traditional engineering standards to be different from the established world norms. Although our participation in the affairs of these two world bodies is increasing, it still could not be described as enthusiastic, largely because the United States is not a metric country.

In order to enjoy the full benefits

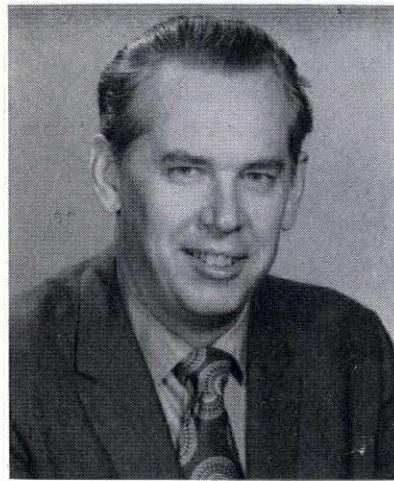
Continued on Page 30

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Introducing: architecture engineering/construction leaders

TAKE ME TO YOUR LEADER

alaska



**Earl Fullingim, President
Alaska Chapter
American Institute of Architects**

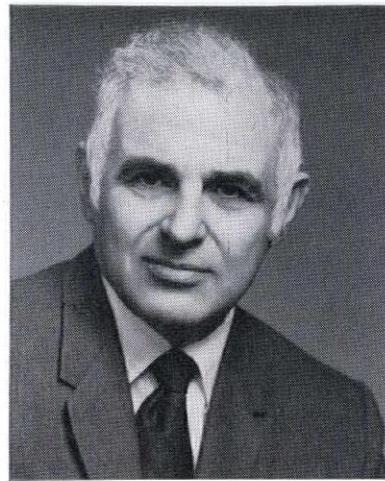
It is our pleasure to again welcome Earl to Symposia's pages — this time, in the role of "fearless leader" for the intrepid Alaska Chapter AIA'ers. Just last September, he closed the doors on his private architectural practice to take over the newly created position of Director of Architecture for the Anchorage Borough School District . . . and quite a job it is, too, as he is a moving force in the construction scheduling and coordination of design for school facilities and site development included in an \$82.4 million bond issue authorized by Anchorage voters.

Prior to his election as President, Earl served as Secretary/Treasurer of the AIA Chapter and was in charge of Publicity for the 1972 Twenty First Regional Conference of the Northwest Region held in Anchorage. He is also a member of the Cook Inlet Chapter of CSI, a member of the Guild for Religious Architecture and the Panel of Arbitrators for the A.A.A. His community activities include service on the Borough Board of Building Regulation Examiners and Appeals, as Deacon of the Scenic Park Bible Church and President of the Anchorage Arts Council.

A native of Minnesota, Earl and his wife, June, have lived in Anchorage with their two children since 1964, and have successfully homesteaded 160 acres in the Eagle River Valley.

Earl's "helpers" in the year ahead include Vice President Douglas Ackley of Juneau and Secretary/Treasurer M. Troy Jenkins of Anchorage; the Board of Directors for the Alaska Chapter — Ralph M. Alley, Jr. and James Bridges of Anchorage and Dick Keithahn of Juneau.

oregon



**A. P. (Benny) DiBenedetto, President
Oregon Council of Architects
American Institute of Architects**

A most efficient and delightful lady is Jody Proppe, Executive Secretary, who carries on the "good fight" for the AIA in Portland. And our thanks to her for a most important communique from that beautiful section of Symposia country . . . to wit:

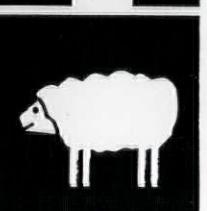
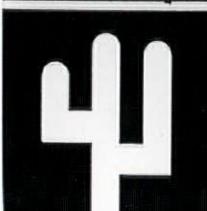
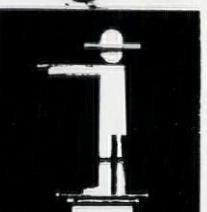
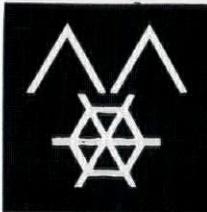
A. P. (Benny) DiBenedetto, A.I.A., has been elected 1973 President of the Oregon Council of Architects, A.I.A. DiBenedetto is Regional Architect for the Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service. He is responsible for the design and construction of research laboratories in Oregon, Washington, and Alaska. DiBenedetto is a native Oregonian and a 1947 graduate of the University of Oregon School of Architecture. He is a member of the Archdiocese Building Commission, Commissioner on the West Slope Water Board, and has been active on numerous civic committees.

DiBenedetto was Secretary of the Portland Chapter, A.I.A. in 1969, and Chairman of the Continuing Education Committee in 1970, 1971, and 1972. He also served as Secretary of the Oregon Council in 1971 and as Vice President in 1972.

Other officers for the Council in 1973 are Jon Kahananui, Eugene, Vice President; Lynn Callahan, Salem, Secretary; and Dick Williams, Eugene, Treasurer.

We would take this brief opportunity to wish Mr. DiBenedetto, and all of Oregon a New Year crammed with "goodies". Right on!

symposia/around the region



arizona

That's Professor Perrell, please.

With the opening of the second Semester at the College of Architecture/Arizona State University, Specifications Consultant and Board Member, Dick Perrell dons academic robes to teach three courses. The Contract Documents course is not new . . . but is significant because the Phoenix Chapter awards a \$300 prize on this one. A new Course, Dick tells us, is a Professional Seminar on Technical Communications which is designed to prepare the student for actual work following graduation. It includes the demonstration and use of drafting equipment; execution and analysis of working drawings and reproduction techniques.

This will hopefully prepare the neophyte architect for useful office employment which has been a tender area with many practitioners.

Dick also reports that a new Development Review Board has been appointed for Scottsdale. It includes a City Councilman, the City's Planning Director, Public Works Director and a City representative. Keith Hollinger, landscape architect, and Dick Seeger a local artist-designer, will also serve. Dick is the only architect member of the Board which will review all projects proposed for construction in Scottsdale excepting individual residences and duplexes.

With The C.A.C.

The new President of the Central Arizona Chapter, Jerry Clark has laid down the development guidelines in the latest issue of "archetype." One of these suggestions is the improvement of communications between practitioners, students and faculty at Arizona State University. President Clark has recommended a change in

by-laws which will permit the Dean and Student Chapter President to sit on the Board, a continuing education program and chapter meetings which will interest all architects from embryo to emeritus.

The first of these is the March 8th Chapter meeting at the Saddleback Inn which will feature a panel discussion by O'Neil Ford, FAIA, Robert Mosher and Kirby Lockard. There will also be a slide program based on the Awards Program of the Western Mountain Region.

Architect's Sundays continue in the Valley of the Sun. Our tentative schedule indicates that on March 4th, there will be two projects from the office of Stanley M. Stein, AIA, up for viewing . . . the Phoenix Community Hospital and the Jewish Community Center. Also on the agenda for the first Sunday in March is the Arizona Medical Plaza from architects Devenney and Stahm. On April One the Scottsdale Municipal Building, Public Library and Municipal Plaza—architects: Gonzales Associates—will be show cased. This is a WMR Winner and well worth seeing!

We must certainly tip the old Editorial Bonnet to this Central Arizona Chapter whose members are making "giant steps" into the future.

colorado

What's Cookin' Down South?

Actually, we should say UP South since Colorado Springs is higher than Mile High Denver, but up or down, as January waned members of the Construction Community were kept busy. The South Chapter/Colorado Society installed their new officers for 1973. These new AIA leaders are President: L. "Bud" Roberts; First Vice President: Clifford Nakata; Second V. P.: Frank Roberts; Secre-

tary: James Young and the new Treasurer is Duane Engle.

That super-duper Pikes Peak Chapter met at the New Hoods on 24 January to discuss masonry wall costs with the program presented by CMI Executive Director "Sandy" Sandoval and Mr. Robert Helfrich, CMI Engineer. This was a "learning" program, which as Editor Albers commented in the last issue of "Intent"—"is the thing CSI is all about."

57TH Annual For Engineers

A number of meetings and events highlighted Engineers Week in Colorado . . . the national theme "A Better Environment Through Technology" well balanced by the Colorado theme of "Engineering Research and Reality."

On February 22 and 23, the University of Colorado's College of Engineering and the Division of Highways, State of Colorado sponsored the Fourth Annual Transportation Conference. The Keynote Speaker at the Luncheon on Thursday was James C. Elms, Director, Transportation Systems Center, U. S. Department of Transportation, Cambridge, Massachusetts, and on Friday morning "UMTA Transportation Planning — Software Research and Development" was the topic of the address delivered by Robert B. Dial who is Chief of the Systems Requirements and Analysis Branch, New Systems Division of the Urban Mass Transportation Administration, Washington, D. C.

Colorado Engineers opened their 57th Annual Convention at 12:15 on February 23rd with a Kickoff Luncheon. The speaker was Robert Gottschalk, United States Commissioner of Patents. The Friday program included an address on "Mine Safety Research" delivered by Dr. J. J. Yancik of the U. S. Bureau of Mines, Department of the Interior; a program titled "The Energy Story" with Walter C. Sheldon of the Denver Exploration and Production office of the Phillips Petroleum Company and Dr. Allen Thurman, Prestressed Concrete of Colorado, Inc, who underscored "The Research Role in Everyday Engineering." Reconvening at 9:30 on Saturday morning, the Engineers heard Consulting Metallurgist Dr. Donald T. Klodt speak on "Corrosion Problems of Air Pollution Control Equipment." Mr. Louis C. Pakiser was the 11:00 speaker presenting "Earthquake Prediction and Control; Progress in Prospects for Success."

At Noon, students from the "Tower" Contest sponsored by the Professional

Engineers were honored and Dr. Max S. Peters, Dean of the College of Engineering, Colorado University, was the principal speaker.

The 57th came to its conclusion on Saturday, February 24th with the usual gala dinner-dance with special entertainment provided by the "Sing Out Colorado" musical aggregation. No official attendance tally is available at this writing but between five and eight hundred engineers and associated industry personnel were expected to celebrate Engineer's Week . . . an annual February event in recognition of George Washington's basic profession.

CEC/Colorado and Engineers Week

The Consulting Engineers Council of Colorado stuck with the calendar (B.M.H.—Before Monday Holidays) and held their Annual Engineering Excellence Awards Banquet on February 22 in the Grand Ballroom of the Brown Palace Hotel in Denver. As always, projects submitted by the membership were on display, and winners were honored — (and we'll have this vital info come April). The trustees of CEC/Colorado Scholarships, under the chairmanship of Jim Stewart, are now in process of selecting recipients of the 1973 Scholarship Award — presented at the Banquet. Entertainment for the evening was provided by the Mario singers—a real treat for those in attendance.

C.E.B.B. Debuts

We could re-write this excellent news item from Denverscope — Denver's newsletter for CSI — but golly, it tells the story very well. So here goes!

"Recognizing the need for more qualified people to perform the very important function of testing and balancing air and hydronic heating and air conditioning systems in new and remodel construction, SMACNA and MCAA jointly sponsored the formation of The National Environmental Balancing Bureau (NEBB). This Association has been in existence for approximately two (2) years. Only recently membership in the Association and thus the birth of The Colorado Environmental Balancing Bureau (CEBB) took place. It has been chartered with eleven (11) sheet metal contracting firms, six (6) mechanical contracting firms, and three (3) combined mechanical and sheet metal firms.

The primary purpose of CEBB is to provide a very high degree of education and skills in the art of testing and balancing heating and air conditioning systems. It entails six months of college level formal training and testing to qualify as a professionally proficient test and bal-

ance firm. It is estimated that by July, 1973, there will be a minimum of 14 firms qualified to assist the mechanical engineers and owners in making their environmental heating and cooling system perform to optimum efficiency for human comfort control.

When fully operational, CEBB will provide the badly needed quantity of test and balance needed for our rapidly expanding Colorado construction market. Contact Wally Gordon at 572-8493 in Denver if you desire more information about CEBB."

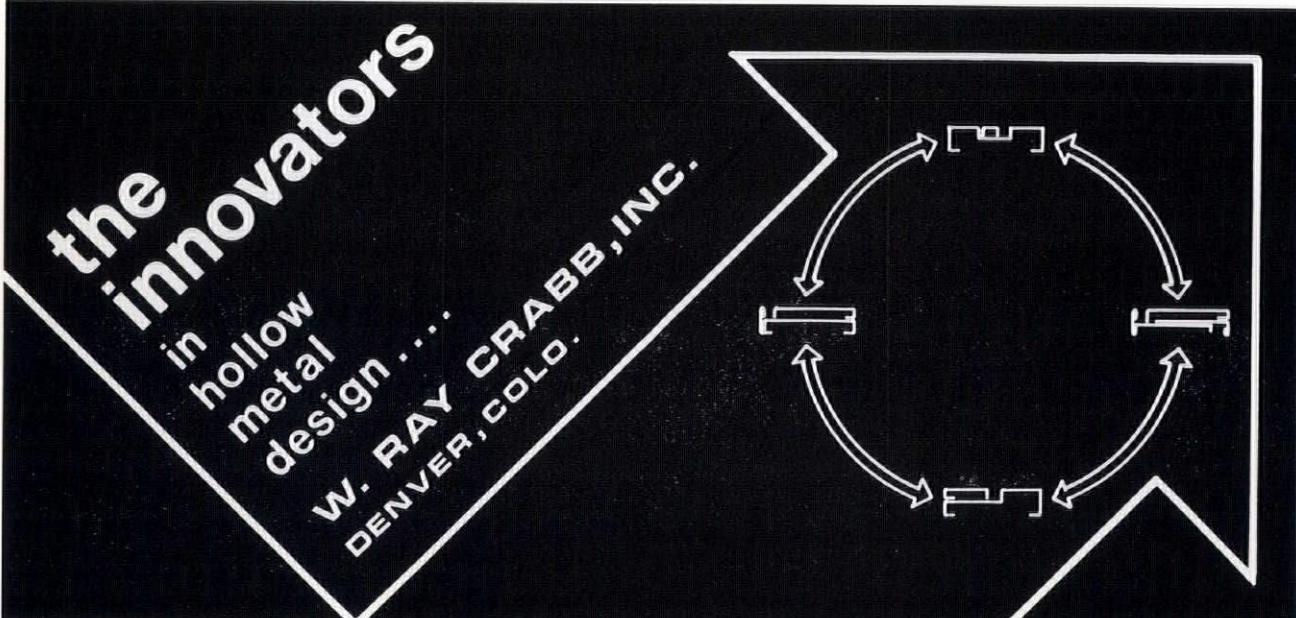
The 20th For Club 20

It was a 20th Birthday Party for Club 20 on February 9 when around five hundred folks from all over Colorado West met at the Ramada Inn in Grand Junction. The program addressed itself to a variety of fields all of vital interest to this section of Colorado. Among topics discussed were Land Use, Tourism and Economic Development. Just a few of



Chen and Associates, Consulting Engineers, celebrated New Year's Day (Year of the Ox) by opening beautiful new offices at 90 South Zuni in Denver.

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the speakers were former Congressman Wayne Aspinall, State Senator John Bermingham, Richard Lamm and Jim Austin, Montrose City Manager. John Crowley, Chairman of the Colorado Land Use Commission, a member of the Presidential Task Force on Land Use and Head of the Colorado Regional Transportation District, was also "among those present" on the speaker's rostrum.

The Annual Man of the Year Award was presented to an outstanding gentleman at the Banquet Friday evening (Name unknown at deadline). Previous winners of this honor are Blake Chambliss, AIA, of Grand Junction; Glen Edmonds, publisher of the Pagosa Springs Sun, and last year's citation was presented to Lyman Thomas of Montrose.

montana

AIA Appointments

Several important appointments were made at the last Board Meeting of the Montana Chapter AIA. The vacancy on the Board was filled with the appointment of Charles Sumner. Wayne Whitney and Ray Amundson were appointed to represent the Chapter on the Construction Industry Council—this group will be active in "watch dogging" the 1973 Montana Legislature.

They also did a little "looking ahead" at this meeting. Marty Crennan, Chairman of the 1975 Regional Convention Committee, made a brief report, and then was authorized to begin lining up his committee for this event.

The Board's deliberations also included some discussion of the Spring Meeting which is traditionally held in Bozeman with participation by the Student Chapter at Montana State University. New Chairman of the School of Architecture, Ilmar Reinvald made some suggestions such as a masquerade Beaux Arts Ball and a kite contest. However no action was taken at this meeting.

nevada

The Sunshine Chapter?

In a sprightly communique from Board Member (and newly-elected up-coming Regional Director) Bob Fielden, he reports that the "Sunshine Chapter in Las Vegas is off and snowballing into 1973. With three inches of snow on the ground, the Chapter met in January for its first regular meeting of the New Year." Bob continues . . . "With the many essential carry-over State legislative pro-

grams still underway, the Chapter has elected to continue under the administrative leadership of last year's officers . . . that is: Art Cambeiro as President; Gary Wilson, Vice President; Errol Hill, Treasurer and Leo Borns as Secretary."

Most of the legislative issues pertain to re-defining the Architectural Registration Act and to establishing a "mini" Brooks Bill similar to that proposition enacted by Congress and signed into action by the President.

Lobbying efforts by the Chapter and by the individual members will begin in late January when the legislature convenes in Carson City, for the 1973-1974 biennium. Although the NAA is pushing these bills alone, it is believed that joint support from the NSPE and the Building Contractors will come as the measures are presented to the bill drafter. The controversy in the proposed legislation comes not from the intent of the revisions but from the language of the bill and the lack of exemptions to engineers and contractors that the revisions include.

Economic Report Is Rosy!

H. M. (Marv) Byars, President of the Nevada Chapter/Associated General Contractors, reported recently that the 1972 construction volume in the state exceeded 1971 by about 50%. Total volume for 11 months of 1972 stood a \$571 million compared to \$383 million for the same period the year before. President Byars senses a real feeling of optimism among contractors for 1973 despite some indications that residential building may have peaked last year. The AGC President did express concern over the failure of Congress to act upon a highway bill for the upcoming fiscal year. He acknowledged that Nevada Governor O'Callaghan's State of the State message promised a healthy building program. Predicted hotel construction in Las Vegas and Reno along with other building projects indicates a good year in 1973 for building contractors, but he cautioned that Nevada's road builders may have a limited volume.

new mexico

January Report 1973

Just two weeks prior to his passing, Brad Kidder summarized AIA Activities, Legislation and a "look ahead" at building prospects for 1973 in New Mexico. As always, his report was informative and interesting.

Santa Fe Officers

The Santa Fe Chapter/AIA has se-

lected their "home team" for 1973. They are President: Urban Weidner; Vice President: Kenneth Clark, FAIA; Secretary-Treasurer is Robert Straiter and the Directors are Ted Luna and John Conron. Delegates to the New Mexico Society are Urban Weidner, Ted Luna and John Conron.

Legislation

"Pat" Wood and yours truly (Brad often called himself the 'perennial' member of this committee) once again are the Legislative Committee for the Architects, but doubt that we will have much to do. Estimates of 1000 to 1200 Bills and Memorials are predicted for this Session—or about 20 a day to be considered, so there is not much likelihood that much of anything affecting the practice of Architecture will get much consideration. Probably we will get one or two which might prove to be embarrassing or an inconvenience—but from early indications that's about all."

Prediction

"Two new Motel-Hotel complexes have opened up and we still have room for a couple more. Condominiums are the big thing at the moment. We're doing four, two here in Santa Fe and two in Taos. Rumors persist that the Big Motel-Hotel/Convention Center Complex will be able to clear legal hurdles and get under way on the Old Loretta School grounds. Controversy seems to be concerned with building heights . . . plans call for seven stories, but doubt if City Fathers will permit more than six.

"The state plans to spend, pending legislative approval, several millions in new construction — there will be a big geographic distribution from Cruces to Clovis, but none so far for Santa Fe. There are several proposed U.S. Government Projects for around the State — but competition on those is very great and nothing may come of any of them this year.

"Well, so much for a forecast. The small housing market is still good and that should keep smaller firms busy so it looks like prospects are good for the First Six Months of '73."

This report indicates, we believe, just how much Symposia is going to miss Brad Kidder in Santa Fe.

oregon

Guarantee and Warrantees

The Willamette Valley Chapter/CSI in Eugene met on 25 January to examine "Guarantee and Warrantees in

the Construction Industry." Subtitle for this program according to "The Documentor" is "Who Can We Stick It With This Time After That Bloody Mess Last Time?" Whatever the title used — the topic is certainly one to interest the entire construction community and the evening was a lively one.

We also noted with interest a report on pending Legislation from the Oregon Construction Industry Council. Some of these issues are—**Statute of Limitations:** An attempt to lower the present 10 year period for alleged faulty workmanship and construction to 5 years. **Mandatory Securities in Lieu of Retainage**—This Bill would require that retainage on public contracts be released to the contractor if he deposits with the public body approved securities of an equal value. Present statutes authorize public bodies to do this . . . but it is optional . . . not mandatory. **Hold Harmless:** Often Contract Specifications on projects require the contractor to indemnify the owner and his agents from damages that may result because of the project, even if damages are caused by the owner's sole negligence. This legislation would declare such clauses to be null, void and unenforceable.

All of these proposed actions would have an effect on the Industry, and we are sure they're watching things closely in Oregon this year.

Perloff Speaks in Portland

A joint meeting of the Portland Chapter/AIA and the Oregon Chapter of the American Institute of Planners was held January 17 at the Portland Center for the Visual Arts. The topic

"Current Directions in Professional Education" featured guest speaker Harvey S. Perloff, Dean of the School of Architecture and Urban Planning at UCLA. Dean Perloff is an Economist-Planner whose specialty is the interrelation of behavioral, physical, economic and social factors in urban and regional development. He has served as consultant to the U. S. Departments of State, Commerce, Housing and Urban Development, Health, Education and Welfare, the TVA and the United Nations.

This is a first in a series which the two sponsoring organizations hope to incorporate in formal meetings between them. Certainly the American Institute of Architects and the A.I.P. share many interests.

Czyzewski Nominated

Harry Czyzewski, president of Metallurgical Engineers, Inc., Portland, Oregon, has been nominated for a position with an advisory group for a National Research Council Committee and attended the first meeting of the group in Washington, D. C. in February. The project is "Evaluating the Electroslag Welding Process for Dynamic Loading Conditions." The advisory group provides overall counsel and technical guidance from project inception through acceptance of the final report for the National Cooperative Highway Research Program.

Czyzewski has had nationwide assignments on metals and materials in highway bridges and large structures.

MEI, an independent consulting engineering firm in Portland, Oregon,

offers services in Materials, Ecology and Industrial products and processes. Testing and analyses are provided by the MEI-Charlton Laboratories unit of MEI.

washington

C. M. Seminar

The Puget Sound Chapter/Construction Specifications Institute is sponsoring an educational seminar on Construction Management beginning April 2nd. Assisted by the Department of Short Courses at the University of Washington, the three hour sessions will begin Monday, April 2nd (7:00-10:00 p.m.) and will continue on each successive Monday (April 9-16-23 and 30) a total of five sessions. All will be held at the HUB Auditorium at the University of Washington and the nominal registration fee of \$25.00 covers all five sessions.

This is a fine opportunity for all members of the Puget Sound Construction Community to acquire some "smarts" on new concepts in construction techniques—ie: Construction Management. Education Committee Chairman, Tom Simmons, along with his very active committee have provided versatile programs, and members of the Puget Sound CSI Chapter will serve as masters of ceremonies. The speakers will include not only local architects, contractors and educators but other prominent experts in the field of CM will be on hand. For instance the April 2nd session will feature James F. Abbott, Construction Management Consultant from San Francisco who will give the Consultant's view of Construction Management. General Contractor, Richard Eberharter will dis-



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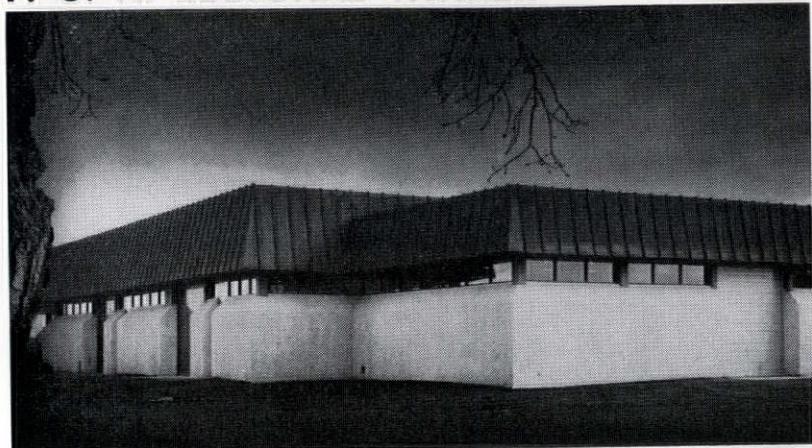
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The Trades and Industry Building of AIMS Community College in Greeley, Colorado was selected as the Regional Winner in the 1972 Portland Cement Association White Cement Awards Competition. A special plaque was presented to the firm of C. Neal Carpenter, Nelson, Haley, Patterson and Quirk at a January recognition luncheon attended by members of the architectural firm, General Contractors Hensel Phelps, the Ideal Cement Company and the staff of AIMS Community College. The new building is one of a projected complex of 26 buildings on a 185 acre site west of Greeley.

cuss the "History of Construction Management."

This is a great opportunity—"Everything You Have Wanted to Know About Construction Management, But Did Not Know Enough To Ask" is really education with a capital E. There will be a mailing of program and registration forms, of course, and the Department of Short Courses at the University of Washington, Seattle—98105 will also have program and registration material available after March 1.

wyoming

Nolan Appointed

Patrick R. Nolan, formerly with the Wyoming highway department, has been named Regional Paving and Transportation Engineer for Portland Cement Association to work in Colorado, Wyoming, New Mexico and Utah.

Nolan's appointment was announced by M. J. Holland, Rocky Mountain Northwest regional manager of the Association with offices in the Boston building in Denver.

Nolan, a 1966 graduate of the University of Wyoming with a bachelor of science degree in civil engineering, for the past six years has served with the Wyoming highway department in Cheyenne, first in the materials department and for the past three years in bridge design. He is a professional

engineer with membership in the National Society of Professional Engineers, the Professional Engineers of Colorado, and the Wyoming Society of Engineers.

New Office in Cheyenne

The Fort Collins, Colorado firm of Land and Water Consultants, Inc. has opened a branch office in Cheyenne located in the Wyoming Plaza Shopping Center. Manager of the new office is Murray Manley, PE.

Since his retirement from the U. S. Army as a Colonel in 1971, Manley has been a Consulting Engineer in the Traffic and Transportation Engineering fields. During that time he developed a plan of transportation improvements for the City of Fort Collins and surrounding area, and served as Transportation Engineering Consultant to the Fort Collins Chamber of Commerce. While in the service, Manley had over 30 years of engineering experience related to all modes of transportation. Just prior to retirement he served as Director of Research, Development and Engineering for U.S. Army Aviation worldwide.

Land and Water Consultants, Inc. is a firm of professional engineers, geologists, soil engineers, hydrologists, land surveyors, landscape architects and land-use planners. The firm serves landowners, developers, municipalities and industries, and is also involved in applied research.

METRICATION (Continued)

of metrification, therefore, the United States must not only embrace the metric system of weights and measures but must also begin the process of accepting emerging world engineering standards as the basis for its product design and manufacture. Taken as a whole, the establishment of such international standards has just begun, and now is the time for this country to participate actively in their development with adoption of the metric system being the necessary first step. If we continue to neglect these two initiatives, our competitors will make the most of our inexplicable reluctance to make this change.

It is for this and other compelling reasons that metrification should and must come to this country as soon as possible. The cost and inconvenience of this changeover will be substantial, even when carefully done by detailed planning. The exact costs and benefits associated with an orderly transition are impossible to evaluate in dollars and cents. However, it really is not so much a matter of can we afford it as whether we can continue to afford not to do it.

Let's talk now about the conversion process itself. Either a so-called "soft conversion" or "hard conversion" can take place. Soft conversion is merely the substitution of metric measures for their non-metric counter-parts with no change made of product size, standard dimensions, tolerances, or performance characteristics. All soft conversion does is to express presently established dimensions, weights, capacities, and no other change is involved. Hard conversion, on the other hand, is the complete standardization of product design and manufacture on metric-based modules.

To illustrate how these two procedures might work consider standard construction commodities such as structural steel, reinforcing steel, masonry block, pipe, and lumber as examples. In the present system, fabrication of all of these items is based on nominal standard sizes expressed as multiples of inches and fractions of inches. In soft conversion, all of these dimensions would remain the same, they would just be expressed as millimeters or centimeters. In hard conversion, standard sizes would be established as multiples of millimeters and decimals of millimeters. This change in standard module size means that there would

eventually be new standard sizes of almost every construction commodity.

The almost staggering implications of hard conversion are immediately obvious. Eventually involved would be extensive modification or replacement of machine tools, manufacturing and packaging equipment of every sort. And yet, experience in other countries as well as our own studies clearly indicate that any metrication changeover in this country must be comprehensive and full scale. Metrification in name only will not provide an effective or satisfactory answer to America's growing isolation in a metric world. Soft conversion is basically unsatisfactory for several reasons. One is that direct conversion of the sizes of existing products will usually result in metric sizes absurdly awkward to use. To give one example, a 4 ft. by 8 ft. sheet of plywood translates into 1.2192 meter by 2.4384 meters. Errors are inevitable when working with such cumbersome numbers and the drawbacks associated with mere conversion of existing dimensions associated with mere conversion of existing dimensions should be immediately obvious. Incidentally, the European metric plywood counterpart is 1 meter by 2.5 meters, which is about 39% inches by 88 inches.

Relative to metrification of the construction industry, available evidence seems to indicate that this country's largest single industry has given precious little thought to this important matter. This is in striking contrast to Great Britain, where the construction industry took the lead in the metrication changeover. In many ways, the construction industry in America seems to have its head in the sand, hoping either that the whole thing will go away or that some token metrification will do the job. A little reflection, however, will soon disclose the futility of thinking that construction can remain as an unconverted island in the American industrial scene. Producing about 10-11 percent of the Gross National Product, construction is simply too large a part of the American economy to consider doing anything but following the same path to complete metrication as other American industries. Because the influence of the system of units and of engineering standards is felt at each interface from design through construction, as well as at interfaces between construction and other industries, no foot-dragging by the construction industry will be possible insofar as metrification is concerned.

What, then, will be the peculiar problems facing the construction industry when the inevitable changeover does take place? First, when speaking of the construction industry, one is actually talking about four main elements, each of which will be differently affected by the metric conversion.

1. *Architects and engineers.*
2. *Building material and equipment manufacturers and suppliers.*
3. *Construction prime contractors and subcontractors.*
4. *The skilled building trades.*

From many points of view, construction is the American industry whose metric conversion offers the greatest challenge because of its sheer size and complexity.

For obvious reasons, the changeover for construction cannot be a precipitate one. Without argument, there must be some period of time like 10 years during which the conversion will be gradually accomplished. Initially, the changeover will be primarily soft, a time of reeducation for everyone concerned to acquaint them with the workings and implications of the metric system. This will be a major undertaking in itself, getting people who occupy all kinds of positions in the construction industry able to *think* in metric terms. To illustrate, when I say to you in centimeters, 92, 61, 92, this probably doesn't make much of an impression, but when I say 36, 24, 36 that has a message. In a similar fashion, 300 p.s.i. concrete is familiar but its equal value of 21 newtons per square millimeter sounds grossly unfamiliar. A 50 kilogram bag of Portland cement sounds strange, and while #4 or #6 reinforcing steel bars have a familiar ring, you have to struggle with 8, 10, 16, or 20 millimeter steel to get a sense of proportion. How much is 40 liters of gasoline? (its about 10.6 gallons) and is 100 millimeters slump concrete a wet or dry mix? (its about a 4 inch slump).

You gentlemen are all highly educated college graduates, many with advanced degrees, but very few of you can *think* in metric terms. Its like trying to learn a foreign language when you have to consciously translate each word to and from English.

Until you can think in a language, you never really know it. However, learning to think metric doesn't take as long as you might think. Some years ago, I was forced to assimilate the metric system while on a job in Guatemala. After about two or three weeks, thinking in the metric system was no longer a conscious effort for me. Other people's experiences in this regard have been about the same.

The design professions will be immediately confronted with necessary practical changes of such things as the scales of drawings. Architects will no longer use the familiar $\frac{1}{8}$ inch or $\frac{1}{4}$ inch to the foot scales, but will go to engineer-type scales of 1 to 50 or 1 to 100 now standard in metric countries. There will also be a change from the long-established standard building module dimensions of 2 inches and 4 inches to perhaps 50 and 100 millimeters. This introduces immediate and inevitable conflict with the present standard stud and joist spacings, column sizes, story heights, room dimensions, ceiling heights, opening dimensions, and most *all* of what are now commonly accepted and widely used standard module dimensions.

A design problem of imposing proportions associated with metrification involves the conversion of a wide variety of numerical design data to metric units. Tables, charts, and graphs of allowable stresses, loads, spans, section moduli, radii of gyration, deflections, and literally hundreds of other design values must be changed over. Computer programs must be rewritten; texts, references, and handbooks redone. Specifications and test standards must be rewritten. The design professions will face a considerable job of retooling of their own.

The imposing job of designing products for new modular dimensions and retooling for their production must be a much more gradual process. The metric change must be integrated with the much broader objective of changing over from contemporary design to design based on materials, components, and equipment produced to coordinated metric sizes. There must be a concerted effort made during this transition to rationalize and standardize construction components and equipment to reduce the labor of installation on the job site to a minimum. A long-term metrification objective is to make the entire construction process more closely resem-

(Metrification is concluded on Page 34)

the last word:

The first of the Grand Nationals is the 54th Annual Convention and Exhibit of the Associated General Contractors of America. More than 4,500 G.C.'s, wives and guests will meet March 9-14 in San Francisco. President James D. McClary of Boise will preside.

Good News! Architect (and nice guy) Henry De Nicola is back doing business at the same old stand . . . that is 1601 South Federal Boulevard. The best ever, Henry!

Change of pace for the Southern Arizona Chapter/AIA this month. Their March 7th meeting is tentatively arranged with Producers' Council from up Phoenix way.

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The growing Cook Inlet Chapter/CSI will hear the report of the Nominating Committee at their March meeting and elect the new Fearless Leaders in April. More to come.

The Rocky Mountain Center on Environment has recently published a paper titled - "Wanted: A Better Approach to Energy Planning". Presented in the hope that environmental problems associated with energy development will be thoroughly evaluated . . . copies may be obtained from ROMCOE, 4260 East Evans Avenue, Denver 80222. A \$2.00 donation to cover costs would be appreciated.

Tom Zimmerman, AIA, of the Central Arizona Chapter has been elected Secretary of the Council of Professions. He'll be watch-dogging the legislature for them just as he has for so many for CAC.

The Portland Chapter/C.S.I. joins with the Portland Asphalt Institute for a presentation on March 13th - time: 7:30 p.m.; place: the NECA Building, 601 N. E. Everett.

Dialing for Dick ! Richard O. Perrell, AIA/CSI, Specifications Consultant has a new number - 948-1870. Same address - 6507 North 86th Street in Scottsdale, Arizona.

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The Washington State Council of Architects will be moving on April 15 to 311-1/2 Occidental Street in Seattle. The Council becomes a "roomie" with the Seattle Chapter/AIA at that time.

Denver's Producers' Council journeyed northward on 21 February for informal gatherings at the Holiday Inn, Fort Collins and the Greeley Country Club. A good time was had by all.

A fine exhibit - "Paul Schweikher - The Art of Architecture" was shown February 4 through March 3 at the College of Architecture building at Arizona State University. Schweikher, incidentally, was born in Denver and attended the University of Colorado - of course, that was just for starters.

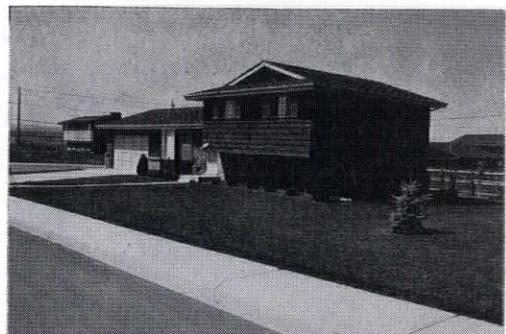
The Colorado Pipe Trades Industry Program has sounded the alert for April 13-14 when a management seminar "Pricing and Bidding Strategy" will be conducted in Denver by the Fails Management Institute of Raleigh, North Carolina.

"Mac" McDonald reports via Ma Bell that the American Institute of Landscape Architects annual was a real "winner" ! More on this convention at Disney World, Florida to come.

The 1973 Lighting Competition was the Big News at the February 24th meeting of the Illuminating Engineers Society held at the Heart O'Denver. We understand the folks from South Dakota were there in force.

Colorado's Architectural Secretaries will be in Boulder on March 13th for their meeting - and it's strictly casual this time around with Jeri Douglas as hospitality chairman. The spot is the party room in Jeri's apartment building complete with indoor pool. A fun time!

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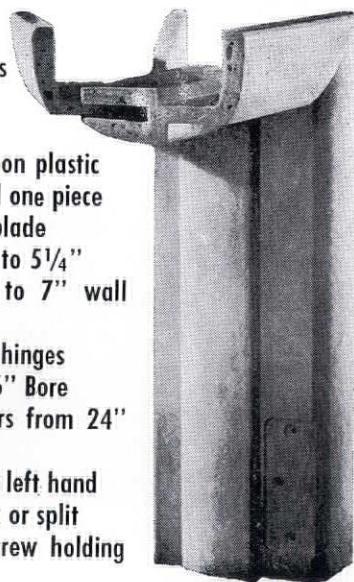
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Following the A.I.A. Grand National in San Francisco, the convention will re-convene in Honolulu on May 11-15. Co-chairmen are Ernest Hara, FAIA and Elmer D. Phillips.

1973 Commissioners for the Central Colorado Chapter/AIA are Jim Noone, Professional Society; DeVen Carlson, Education and Research; Ollie Nielsen, Professional Practices; Dick Crowther, Environment and Public Affairs - John Reece.

Surgery for Traudi Almeda, Executive Secretary for the Washington Council/AIA in February. Hope this March issue will find you up and at 'em again, Traudi!

The architectural practice of William Wilde and Associates of Tucson has been reorganized as a corporation which means beside Mr. W. - corporate directors are Dennis Brizee, Richard Anderson and Douglas Eddy.

Metrication (Concluded)

ble the field assembly of pre-engineered parts.

It is not realistic to suppose that metric changeover can or should be delayed until the new metric sizes of construction materials are actually available. Metrication *must* be started while customary sizes of construction products are still being manufactured. Not only must existing inventories of materials be used, but product design and manufacture can reasonably go metric only on a timetable compatible with market-place requirements and normal tool and production equipment obsolescence and replacement. Construction and building equipment have useful lives of many years and parts and replacement components must continue to be available. Old-line construction components will have to be fitted into the new design modules. New product sizes will be phased in as they become available. Evolving metric usage will soon produce an essentially bilingual environment. The simultaneous usage of customary and metric units will undoubtedly persist for many years.

Metrication of the construction industry will not be without pain, expense, and inconvenience. Once the process is started, however, the process should be largely self locomoting. New product design, manufacture, and availability will largely be controlled by the overall progress of metrication in American industry as a whole.

The necessary point of beginning, a process which can and should be initiated now, is the familiarizing of large numbers of people with a new and strange system of measurement, a considerable educational effort. Not only must architects, engineers, and their aides be trained but material and equipment dealers, construction tradesmen, contractor personnel, job inspectors, equipment mechanics, owner representatives, and many others must become versed in the metric system. Educating people to the metric system will be a big job but the sooner it is done, the more smoothly the inevitable transition will proceed. Metrication of the construction industry does not pose any insoluble or even unique problems, but the

Industry surely needs to do some planning while there is yet time.

This will conclude our initial coverage of the Region 10 Conference . . . to say that there is more — much, much more — to come is an understatement indeed. In the upcoming April, we will have a summary of the major part of the program which was Construction Management — a report of the happy events which took place at the Awards Banquet on Friday evening and the Region 10 Business Meeting and Forum. It has been our desire to present all sides of the Construction Management picture — in November 1972, "An Architect Looks at Construction Management" by Seymour Slater, AIA — in this issue "What Options Does the Architect/Engineer Have In Construction Management" — and we felt it only right and proper that the large CM firm be given "equal time." So join us in April right here, at the same old stand on the corner by the Cigar Store Indian for a completion of our "wrap up" on the 1973 Region 10 Conference.)

Architectural

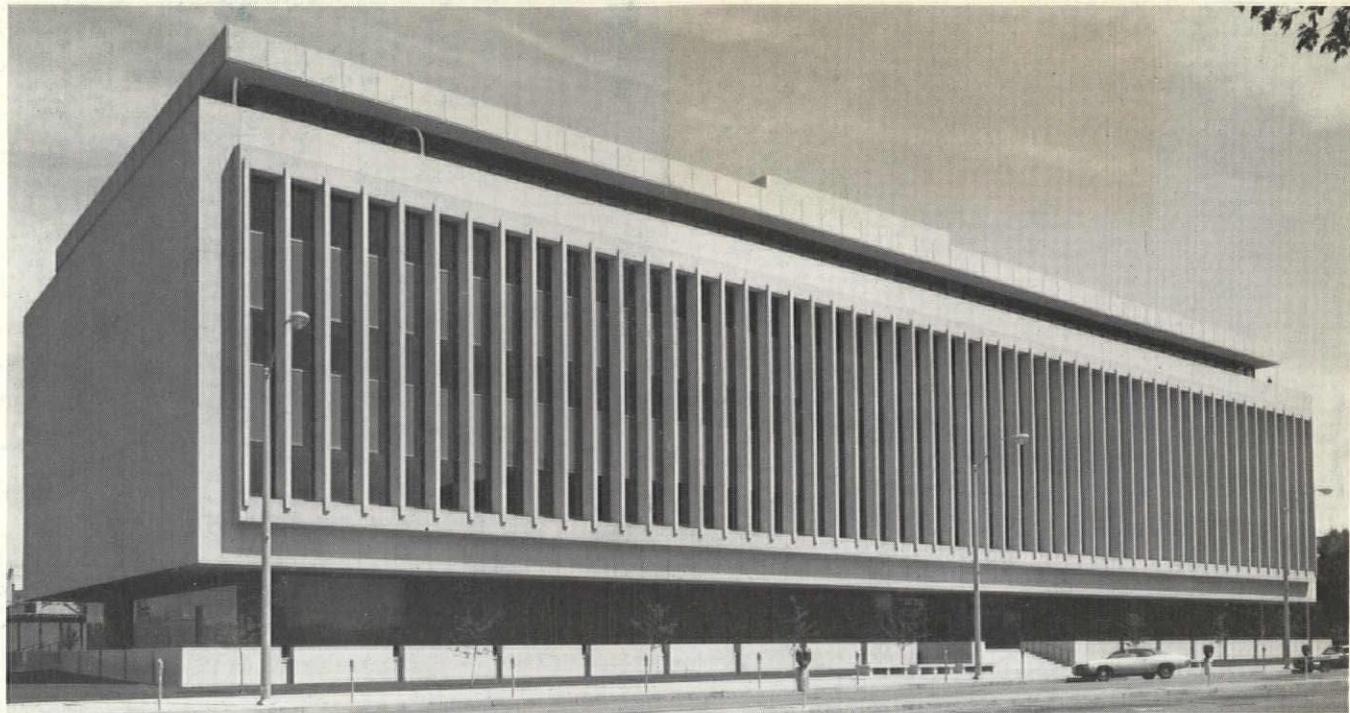
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